Ask your Jobber or write for Free Copies of our latest cumulative Index and "How to File" Folders

TRADE NAME	MODEL	FOLDER NO.
Airline	74WG-1054A, 74WG-1054B	4712-1
Airline	74BR-1812B	4712-2
Algene	AR5U	4712-3
Algene	AR6U	4712-4
Automatic	601, 602 (Series B)	4712-5
Automatic	660, 662, 666	4712-6
Automatic	677	4712-7
Bell Sound	3715	4712-8
Bell Sound	3725	4712-9
Belmont	5D110	4712-10
Concord	6T61W	4712-11
David Bogen	GO-125	4712-12
Dearborn	100	4712-13
Echophone	EC-403, EC-404	4712-14
Garod	5A-1	4712-15
Garod	5D-3, 5D-3A	4712-16
General Industries	Record Changer RC130, RC130L	4712-33

TRADE NAME	MODEL	FOLDER NO.
Knight	5B-185	4712-17
Magic-Tone	504 (Bottle Receiver)	4712-18
Majestic	7S433, 7S450, 7S470 (Ch. 4702, 4703)	4712-19
Monitor	M-403	4712-20
Olympic	6-604 Series	4712-21
Packard-Bell	572	4712-22
Philco	47-1230	4712-23
RCA	711V2 (Ch. RK-117, RS-123)	4712-24
Sentinel	284GA, IU284GA	4712-25
Sentinel	295-T	4712-26
Simplon	CA-5	4712-27
Televox	27-P-T	4712-28
Televox	RP	4712-29
Temple	G-619	4712-30
Truetone	D2665	4712-31
Utah	Record Changer 650	4712-34
Woolaroc	3-5A	4712-32

The PHOTOFACT Servicer

JULY 15, 1947 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ VOL. 2, No. 22

ROBERT M. ELLIS, *Editor*

NEW RECORDING SYSTEMS

We must confess that the initial announcements of the new unorthodox recording systems of the wire and coated-paper types left us rather cold and unenthusiastic. As every old timer in the radio business knows many recording systems have been announced in the past, but none have shown much more than limited popular appeal.

Frankly, we know that you are going to get a tremendously big thrill when you try one of the new wire or tape recorders. The first impression will undoubtedly be that of surprise at the naturalness of reproduction and the almost uncanny absence of hiss, scratch or background noise. Repeated playings do not seem to increase this noise level, nor lower the fidelity. These new machines are ideal for recording radio programs—up to an hour of program can be "canned" on a single record by some machines; and when the program is no longer desired another program can be placed on the same wire or tape, and it can be used over and over again. In most new machines erasing and recording is accomplished as a single operation.

We hope we can instill in you some of the enthusiasm for these new home recording systems that we feel ourselves because we believe they are destined for tremendous popularity. We are glad too, that the servicing and maintenance of these new recorders will provided an added source of revenue to service engineers.

How can you get service data on the new recorders?

That's easy—all popular recorders will be covered by PHOTOFACT Folders. In addition, a number of the new recorders will be covered in the "1947 Automatic Record Changer Manual" which is scheduled for September publication. Here is an added reason why you need this new 400-plus page size new book.

★ ★

RESONANT CONDENSERS

In the past it has been the general practice of paper condenser makers to design their products to have the least possible inductance. An ideal condenser has always been considered as one having zero inductance, and all deviations from this ideal have been looked upon as undesirable.

It is interesting to note that one condenser maker has announced a series of tubular paper by-pass condensers which have had deliberately engineered into them sufficient inductance so that they are self-resonant in the neighborhood of 455 kc. This results in a condenser having a remarkable by-passing efficiency at the intermediate frequency—for example, the .05 mfd. 400 volt unit has an average impedance of less than 0.8 ohms at 455 kc. The .2 mfd. 400 volt unit has an average impedance of approximately 0.3 ohms at the intermediate frequency. In external appearance, these new resonant condensers are quite similar to the tubular paper condensers of conventional construction.

In taking advantage of the high by-passing efficiency of these new resonant condensers, radio receiver manufacturers may produce receivers whose proper performance depends on the use of this product; and in such cases the substitution of a standard replacement-type tubular paper condenser may lead to oscillation of the i.f. amplifier.

Here is an added reason why you should always check the replacement condenser recommendations on a receiver as given in the PHOTOFACT Folder before starting your repair. When a resonant condenser is used the replacement listing will be quite different from the replacement listing for a standard condenser. If no universal replacement is listed for an original equipment condenser, you will understand that the original equipment condenser has some unusual characteristic which makes a substitution undesirable; and that an exact duplicate under the maker's part number must be used. Such a replacement may not be available from your radio parts distributor, and may have to be obtained directly from the receiver manufacturer, his distributor or dealer.

We wish to extend our thanks to Mr. Leon Podolsky, of the Sprague Electric Company for calling our attention to this new product; and for sending us detailed prints and specification on the same.

★ ★

NEW FOLDER ON FILING

Do you have a copy of the new brochure "Five Good Ways to File PHOTOFACT Folders"? It's a *must*, and it's yours for the asking.

There is a simple logical way to file PHOTOFACT Folders that provides maximum convenience for your shop. Maybe it's the new 30-second system "Filing by Set Number" that is meeting with such enthusiastic response. Others like Method 2, "Alphabetical in File Drawers"—or they prefer to use inexpensive three ring binders, one for each letter of the alphabet as described by Method 3. Method 4 shows a logical way of filing by volume; Method 5 is the "Alphabetical Library File System."

To get one of these profusely illustrated folders which takes the "cussing" out of filing—just send us a postal card, sign your name and address and say—

"Please send me 'Five Ways to File PHOTOFACT Folders.' " We'll send it by return mail.

★ ★

CUMULATIVE INDEX

PHOTOFACT FOLDERS, SETS Nos. 1 *through* 20
VOLUMES I *and* II

A cumulative index for the first twenty PHOTOFACT Folder Sets was included in Set No. 20, publication date June 15th. Don't be without one—if you have misplaced or damaged yours—or if you are not up quite that far with your purchases—ask for a copy. It's available without charge from our office in Indianapolis.

★ ★

A REMINDER

If you have not already done so, be sure to order your copy of the *Howard Sams Dial Cord Stringing Guide* today. The edition is limited and a reprint is not contemplated until a future date.

This handy pocket volume, announced in Servicer No. 21, gives dial stringing diagrams on practically all receivers issued from 1938 through 1946—it's cost is only 75¢ net to service engineers. The *Howard Sams Dial Cord Stringing Guide* is available from your authorized distributor and will pay for itself many times over in time and temper saved.

★ ★

FIELD EXPERIENCES

Here is your opportunity for passing practical service experiences to others for the benefit of all. For every service "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT Folder Set. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis

made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

★

R.C.A. 55AU, 55U (CH. RC 1017)
Photofact Set No. 2—462-16

"Complaint: Distortion, noticed mostly on high tones, more prominent on record reproduction.

"The trouble turned out to be a broken voice coil lead where these leads are cemented to the linen spider. When checking the voice coil for resistance move the cone back and forth, since the trouble may not show up when the cone is in its resting position."

Submitted by: Allen W. McKim, 150 Gay Street, Philadelphia 27, Pa.

★

MECK 5D7/WL18
Photofact Set No. 21—4711-22

"The new Meck 5D7/WL-18 AC-DC Battery Portable uses 2—45 volt 'B' batteries, and 5 size D flashlite for power supply. This set also has a new circuit that recharges the 'B' batteries while playing on AC and the manufacturer claims that the 'B' batteries will last about three times longer with this new circuit. However, this same circuit will cause a drain of 1.8 ma. from the 'B' batteries if the AC cord is pulled from the receptacle and the switch is not turned off. In other words, if the radio is played on AC, do not pull the AC plug to shut the radio off without turning off the power switch on the radio—a set of dead 'B' batteries will result if that is done."

Submitted by: John Gort, Johnnies Radio Service, Rock Valley, Iowa

★

PHILCO 46-1201
Photofact Set No. 4—464-35

"We had an unusual circumstance with a Philco 1201 some time ago. As you know the tubes are connected in series. All tubes tested o.k. in tester and parts in set were o.k. One of the tubes had too low a resistance on the filament, consequently, the voltage was low on this tube and a bit too high on others."

Submitted by: J. B. Hawn, Hawn Radio and Appliance, Goodland, Indiana

★

ZENITH 6G001, 6G001Y
Photofact Set No. 3—463-14

"Complaint: Set fails to play on AC.

"Cause: AC-DC switch fails to return to normal when AC plug is removed, due to spring jumping out of position. Repair is made by replacing spring in switch and pinching the end of the spring to hold it in position."

Submitted by: Mr. Morris Robinowitz, c/o Ruby's Radio Repair & Sales Co., 1475 Second Avenue, New York 21, New York

★

RECORDIO 6B10, 6B20, 6B30, 6B32
Photofact Set No. 8—468-27

"Wilcox Gay Recordio Model 6B30 Serial No. 714924 developed a very loud hum which could not be reduced by turning the volume control or by removing any tube except the 6V6 output. This hum sounds like open filter, but tests showed low cathode voltage on 6V6 tube. This low voltage was traced to a leaky dial light socket.

"On the latest schematic, it will be noted that the cathode of the 6V6 returns to the filament line, so that a ground in the dial light socket will affect the bias on the 6V6. The cure is to replace the socket."

Submitted by: Carroll E. Drysdale, Drysdale & Gustafson, 24 Stearns Street, Bristol, Conn.

EMERSON 523
Photofact Set No. 5—465-37

"With Emerson 523 portable or similar circuits, when you find weak 1.4 volt tubes that are not very old, recheck cathode voltage on 50B5. It may go up and cause new tubes go dead."

Submitted by: C. E. Cook, 616 Glenway Drive, Madison, Wisconsin

★

R.C.A. 59AV1, RECORD CHANGER 96001-2
Photofact Set No. 6—466-25

"The R.C.A. record changer, Model 96001-2 out of an R.C.A. combination, Model 59AV1 acted as if it had a faulty pick-up cable, since the output of the pick-up was erratic as it rode across a record. Replacing the cable did not rectify the trouble. On further inspection found that the pick-up shorting out switch, located underneath and at the base of the pick-up arm, was bent in a manner to activate the switch as the pick-up traveled across the record. This switch is a light flat spring and when bent back into its correct position, the pick-up was normal."

Submitted by: Mr. Morris Goldberg, Morris Radio and Home Appliance Service, 2012 Murray Avenue, Pittsburgh 17, Pennsylvania

★

UTAH 550 RECORD CHANGER
Photofact Set No. 8

"On at least three Utah (Detrola) Model 550 Record Changers the complaint was that the changer either dropped all the records or none. I found that strut part No. B-50181 had been worn by the turntable bearing assembly part No. A-50010 until the spindle was free to move to and fro. I replaced the strut in all cases and the trouble cleared up.

"On another occasion I found the belt had stretched until it fit too loosely and the changer would not go through its cycle."

Submitted by: Shelby Draughn, Draughn Radio Service, Hindman, Kentucky

★

NOTES ON MINIATURE TUBES

"Eight different sets, different makes and models, but all using the miniature series of tubes were received by the dealers either inoperative or intermittent. In each case the trouble was located in a miniature tube wafer socket. One or more of the socket contacts had been pushed through the pin hole and was making either no contact or intermittent contact with the tube pin.

"Also concerning miniature tubes, several new sets were sent to our shop for being dead after only an hour or so of use. In each case it was found one of the miniature tubes had the glass cracked, the crack extending from one of the pins that was slightly bent. We figured that the tube was inserted with a bent pin which placed a stress on the glass and as soon as the glass was heated the crack developed. This theory has been borne out as one of the replacement tubes we used was placed in service with a bent pin and it also developed a crack."

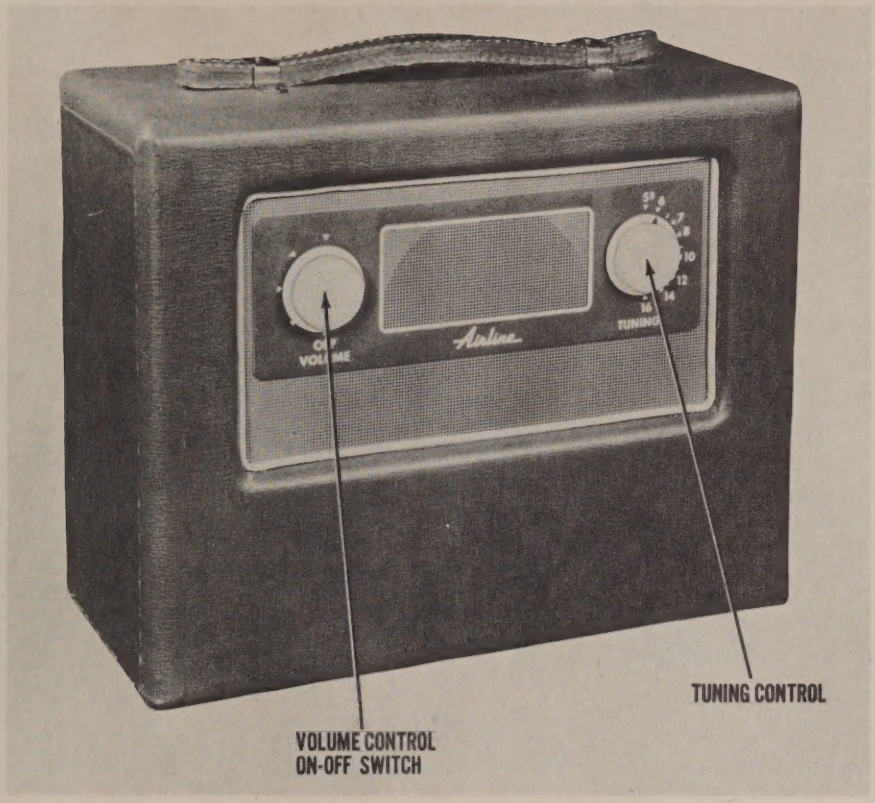
Submitted by: Mr. P. F. Thompson, Thompson Radio Service, Forest City, Iowa

PUBLICATION DATES

When will other sets of PHOTOFACT Folders be published?

Volume 3—Set No. 23 ..... **September 15**
Volume 3—Set No. 24 ..... **September 15**
Volume 3—Set No. 25 ..... **October 15**
Volume 3—Set No. 26 ..... **October 15**

If you have been unable to get any issues of PHOTOFACT *Folder Sets, send your order and money directly to us and we will see that you are supplied.*



AIRLINE
MODEL 74WG-1054A

AIRLINE
MODEL 74WG-1054A

AIRLINE MODEL 74WG-1054A

TRADE NAME	Airline, Model 74WG-1054A, 74WG-1054B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	THREE Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 1R5 Converter, 1U4 1st IF Amp., 1U4 2nd IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output.
POWER SUPPLY	105-125 Volts AC-DC or 9 Volt "A" Supply & 90 Volt "B" Supply in Pack Form
RATING	.140 Amp. @ 117 Volts AC or 50 MA @ 9.1 Volts DC & 12 MA @ 93 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) of 1U4 (2) 1st IF Tube. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2,	Adjust for maximum output, If AC power is used without an isolation transformer, reduce dummy ant. to 200 MMF to reduce hum modulation.
2	.1 MFD.	High side to front stator of tuning cap. Low side to B-.	"	"	"	A3,A4.	"
3	.1 MFD.	"	1620KC	"	"	A5	Adjust for maximum output. Install in cabinet.
4	.1 MFD.	High side to ext. ant. clip. Low side to ext. ground clip.	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output. Set pointer at the 1400KC reference mark.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

AIRLINE MODELS
74WG-1054A, 74WG-1054B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	1st IF Amp.	1U4	1R4	6AR	
3	2nd IF Amp.	1U4	1U4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	45X353	UP6CJ44	FP357	DY-3x40-150	EL-340	AF888D	■ Filter
B	40	150							▲ "
C	20	150							"
7A	200	25	45X354	BRH2525		M-250-25	UHC-202	2-PRS25-100	Filament Bypass-Red
B	50	25		BR502		M-50-25	TA-50	PRS25-50	" " -Yel.
8	.1	400	D67104	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Filter
9	.005	400	D66502	DT6D5	TP408	S-6-005	TC-25	484-005	Output Plate Bypass
10	.005	200	B66502	DT6D5	TP408	S-6-005	TC-25	484-005	Audio Coupling
11	.05	200	B66503	DT4S5	TP426	S-4-05	TC-15	484-05	Audio Screen Bypass
12	.005	200	B66502	DT6D5	TP408	S-6-005	TC-25	484-005	Audio Coupling
13	.05	200	B66503	DT4S5	TP426	S-4-05	TC-15	484-05	RF Bypass Pwr. Supp.
14	.05	200	B66503	DT4S5	TP426	S-4-05	TC-15	484-05	1st IF Screen Bypass
15	.05	200	B66503	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
16	.05	200	B66503	DT4S5	TP426	S-4-05	TC-15	484-05	Filament Bypass
17	.05	200	B66503	DT4S5	TP426	S-4-05	TC-15	484-05	" "
18	.05	200	B66503	DT4S5	TP426	S-4-05	TC-15	484-05	" "
19	.1	400	D67104	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
20	100	500	47X476	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Audio Plate Bypass
21A	50		47X112	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Diode Filter
B	50		47X112	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	" "
22	100	500	47X476	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	IF Coupling
23	47	500	47X463	5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	Osc. Grid Capacitor
59	100	500	47X476	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling ‡

‡Used in Issue B models.

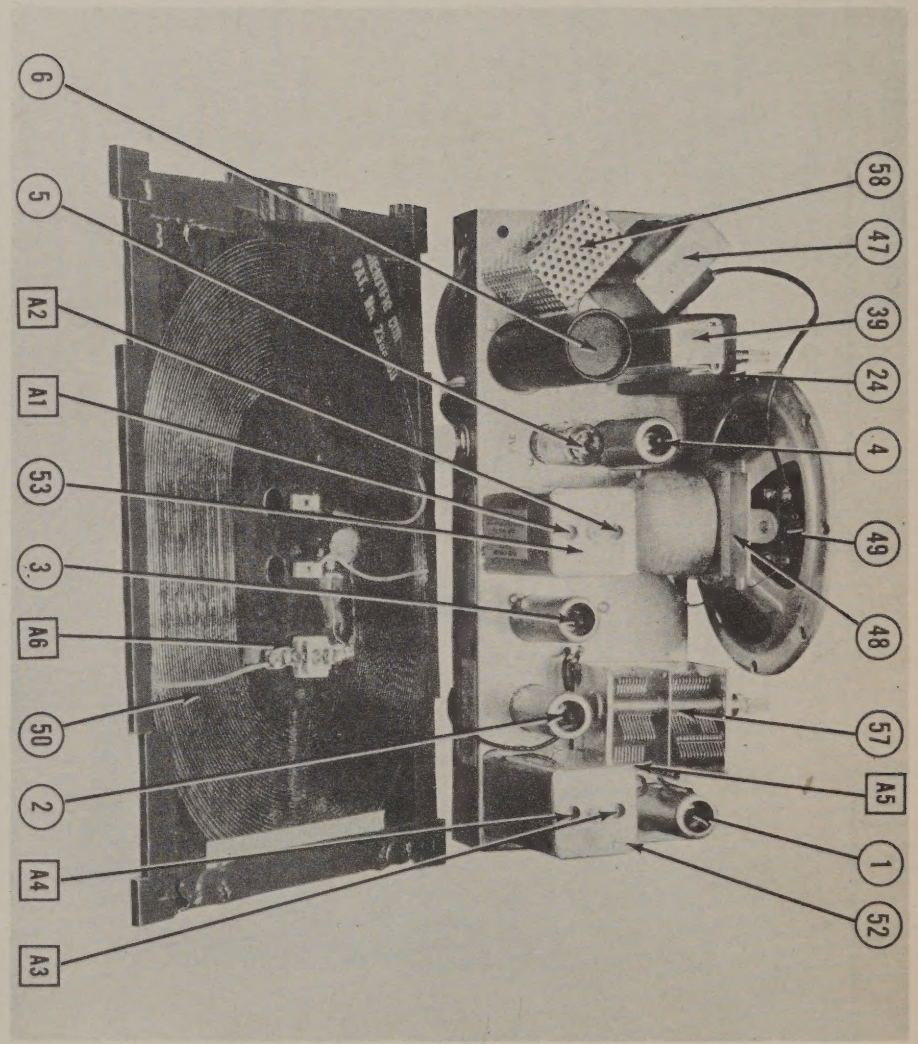
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
24A	500KΩ	1	36X310	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KS8-3	Attach to 24A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
25	33Ω	½	B85330	BW-½-33	Or.-Or.-Br. Filament String
26	100KΩ	½	B84104	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
27	15KΩ	½	B84153	BTS-15K	Br.-Grn.-Or. Voltage Dropping
28	12KΩ	½	B84123	BTS-12K	Br.-Red-Or. IF Plate Load
29	3.3 Meg.	½	B85335	BTS-3.3 Meg	Or.-Or.-Grn. 2nd IF Grid
30	1500Ω	½	B84152	BTS-1500	Br.-Grn.-Red Voltage Dropping
31	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
32	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
33	4.7 Meg.	½	B85475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
34	3.3 Meg.	½	B85335	BTS-3.3 Meg	Or.-Or.-Grn. AF Screen Dropping
35	1 Meg.	½	B84105	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
36	3.3 Meg.	½	B85335	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
37	1500Ω	½	B84152	BTS-1500	Br.-Grn.-Red Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
38	82Ω	2	D84820	BW-2-82	Gray-Red-Blk. Rectifier Ballast
39	2000Ω	7	43X220	AB-2000	Filament String
40	1500Ω	½	B84152	BTS-1500	Br.-Grn.-Red Filament String
41	390Ω	½	B84391	BW-½-390	Or.-White-Br. " "
42	1500Ω	½	B84152	BTS-1500	Br.-Grn.-Red " "
43	390Ω	½	B84391	BW-½-390	Or.-White-Br. " "
44	120Ω	½	B84121	BW-½-120	Br.-Red-Br. Filament String
45	120Ω	½	B84121	BW-½-120	Br.-Red-Br. " "
46	820Ω	½	B84821	BTS-820	Gray-Red-Br. " "
60	2.2 Meg	½	B85225	BTS-2.2 Meg	Red-Red-Grn. Conv. Grid-See Note

Note-Used in issue "B" models only.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
47	10500Ω	3.4Ω	630Ω	.5Ω	51X130	A-3879	T22S47		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
48A	FIELD / PM	VC IMP. 3.4Ω	12A429	ST-107* Mod. P5-V		*Fabricate new mounting bracket.
49A	CONE DIA. 4-3/4"	VC DIA. 1/2"	ORDER FROM MANUFACTURER. (SPECIFY PART NUMBER AND LETTERS STAMPED ON SPEAKER)			
48B	FIELD / PM	VC IMP. 3.2Ω	12A446	ST-107† Mod. P5-V		Alternate Speaker †Drill and tap magnet frame.
49B	CONE DIA. 4-3/4"	VC DIA. 1/2"	ORDER FROM MANUFACTURER. (SPECIFY PART NUMBER AND LETTERS STAMPED ON SPEAKER)			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
50	Loop Ant.	.4Ω	3Ω	26A430		
51	Osc. Coil	2.2Ω	6Ω	9A1893	14-1040	
52	Input IF	12Ω	14Ω	9A1889	16-6658	
53	Output IF	14.5Ω	12Ω	9A1890	16-6660	

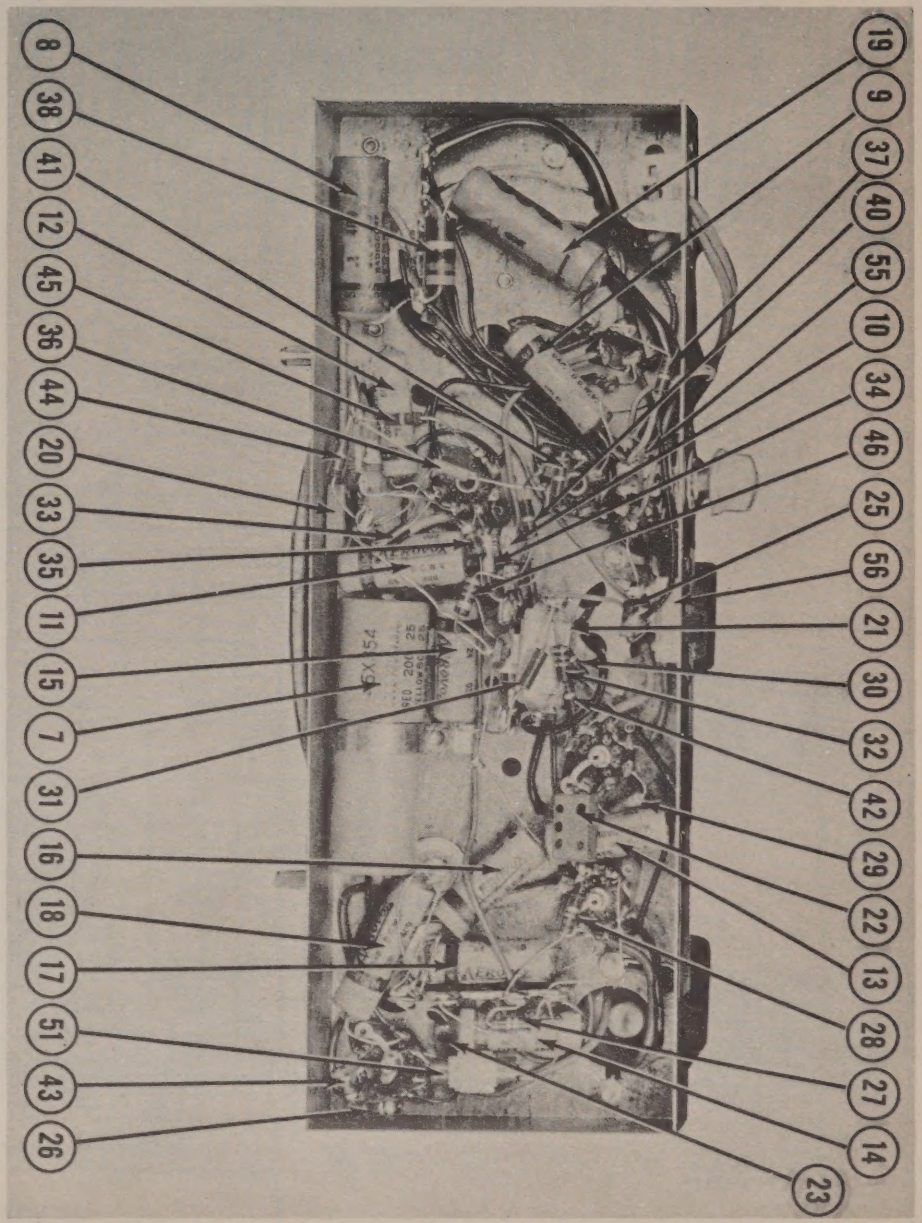
BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
54	9V. "A" 90V. "B"	62-33			#754	

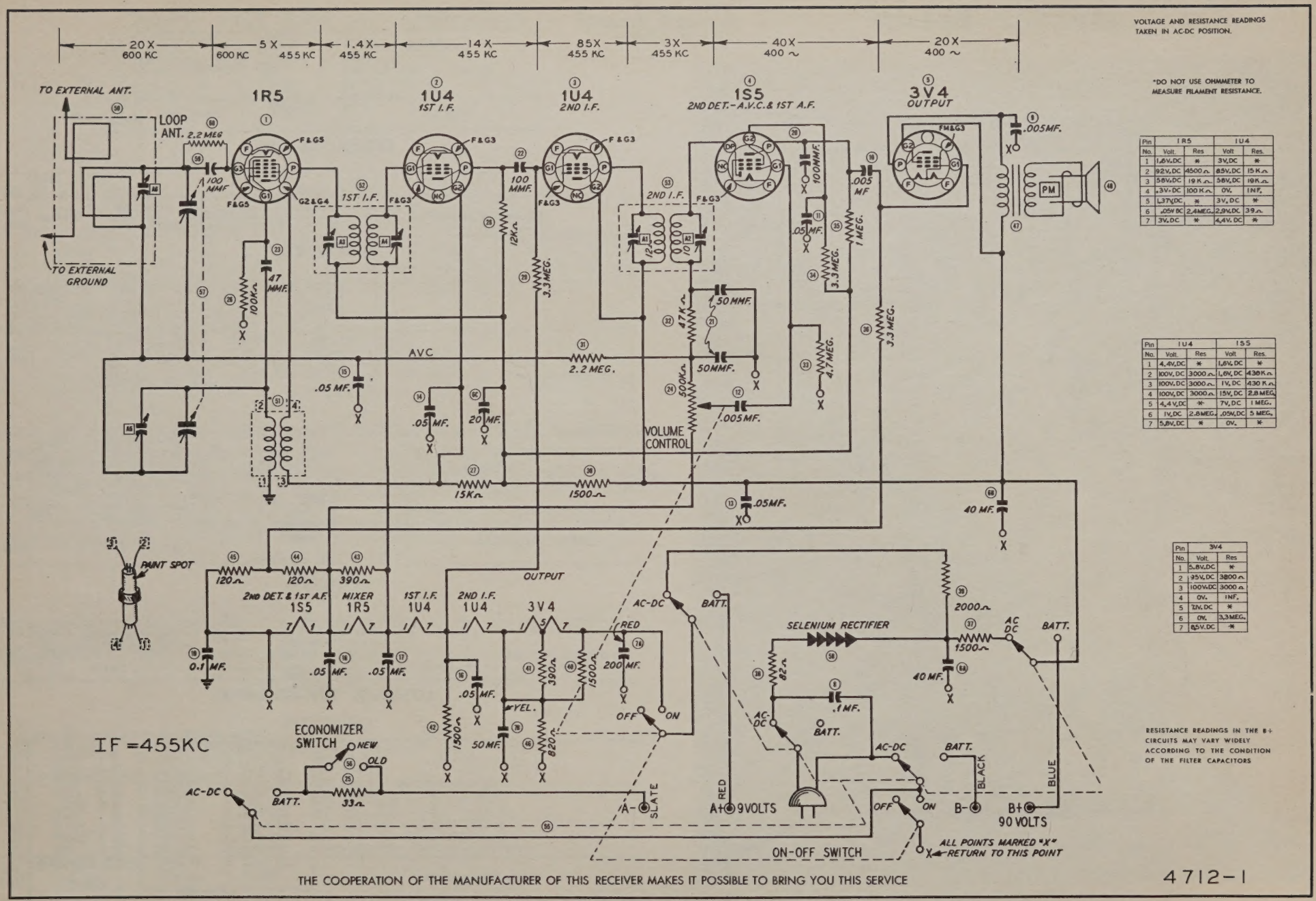
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
55	Switch	2A368	Power Change-Over
56	"	2A175	Economizer
57	2 Gang Var. Cap.	14A192	20-473 MMF, 32-192 MMF
58	Rectifier	25A1019	Selenium
A6	Trimmer	17A123	Antenna Adjustment
	Pointer Disc	15X235	

CHASSIS—BOTTOM VIEW



AIRLINE MODELS 74WD-1054A, 74WD-1054B



Pin No.	1R5 Volt.	1R5 Res	1U4 Volt	1U4 Res.
1	1.6V.DC	*	3V.DC	*
2	82V.DC	4500 Ω	85V.DC	15 KΩ
3	58V.DC	19 K Ω	58V.DC	19 KΩ
4	.3V.DC	100 K Ω	0V.	INF.
5	1.37VDC	*	3V.DC	*
6	.05V DC	2.4MEG.	2.9V.DC	39 Ω
7	3V.DC	*	4.4V.DC	*

Pin No.	1U4 Volt	1U4 Res	1S5 Volt	1S5 Res.
1	4.4V.DC	*	1.6V.DC	*
2	100V.DC	3000 Ω	1.6V.DC	430 KΩ
3	100V.DC	3000 Ω	1V.DC	430 KΩ
4	100V.DC	3000 Ω	15V.DC	2.8 MEG.
5	4.4V.DC	*	7V.DC	1 MEG.
6	1V.DC	2.8MEG.	.05V.DC	5 MEG.
7	5.8V.DC	*	0V.	*

Pin No.	3V4 Volt	3V4 Res
1	5.8V.DC	*
2	95V.DC	3800 Ω
3	100V.DC	3000 Ω
4	0V.	INF.
5	7V.DC	*
6	0V.	3.3MEG.
7	85V.DC	*

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to bottom end of volume control during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

AIRLINE MODEL 74BR-1812B

TRADE NAME	Airline, Model 74BR-1812B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated FM-AM Superheterodyne with Phonograph Provisions
TUBES (NINE)	Types, 6BA6 Mixer, 6C4 Osc., 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp.,6BA6 FM 3rd IF Amp., 6AL5 FM Det., 6AT6 AM Det.-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105 - 125 Volts AC
RATING	.750 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC FM 88 - 108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set notch (on right edge of dial pointer saddle) to last reference line at left end of dial backplate. When aligning FM IF & RF use a VTVM or 20,000 ohm per volt DC meter as an output indicator. In Step 7 the two 100KΩ resistors should be matched within 5%. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 1 (grid) of 6BA6 Tube (3). Low side to chassis.	455KC	BC (center position)	1400KC	Across voice coil	A1,A2	Adjust for maximum output.
2	.1 MFD.	High side to Pin 1 (grid) 6BA6 Mixer Tube (1). Low side to chassis.	"	"	"	"	A3,A4	" " " "
3	200MMFD	High side to ext. ant. clip. Low side to ext. ground clip.	1400KC	"	"	"	A5	" " " "
4	200MMFD	"	600KC	"	600KC	"	A6	Adjust for maximum output. Repeat Steps 3 and 4 until no further improvement can be made.
5	200MMFD	"	1400KC	"	Tune for maximum out.	"	A7	Adjust for maximum output.
6	.1 MFD.	High side to Pin 1 (grid) 6BA6 3rd IF Tube (5). Low side to chassis.	10.7MC	FM (fully counter clockwise)	108MC	VTVM connected from Pin 7 of 6AL5 to chassis.	A8	Adjust for maximum deflection.
7	.1 MFD.	"	"	"	"	Connect 2 100KΩ resistors in series from Pin 7 of 6AL5 to chassis. Connect VTVM from junction of these 2 resistors to junction of cap.(21) and resistor (71).	A9	Adjust for zero deflection
8	.1 MFD.	High side to Pin 1 (grid) 6BA6 2nd IF Tube (4). Low side to chassis.	"	"	"	VTVM connected from Pin 7 of 6AL5 to chassis	A10, A11	Adjust for maximum deflection.
9	.1 MFD.	High side to Pin 1 (grid) of 6BA6 Tube (3). Low side to chassis.	"	"	"	"	A12, A13.	"
10	.1 MFD.	High side to "A" terminal, Low side to "D" terminal on ant. terminal board.	"	"	"	"	A14, A15.	"
11	.1 MFD.	"	"	"	"	"	A16	Adjust for minimum deflection.
12	300Ω	"	100MC	"	100MC	"	A17, A18	Adjust for maximum deflection.

AIRLINE
MODEL 74BR-1812B

AIRLINE
MODEL 74BR-1812B

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mixer	6BA6	6BA6	7BK	
2	Oscillator	6C4	6C4	6BG	
3	1st IF Amp.	6BA6	6BA6	7BK	
4	FM 2nd IF Amp.	6BA6	6BA6	7BK	
5	FM 3rd IF Amp.	6BA6	6BA6	7BK	
6	FM Detector	6AL5	6AL5	6BT	
7	AM Det.-AVC-AF	6AT6	6AT6	7BT	
8	Power Output	6V6GT	6V6GT	7AC	
9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

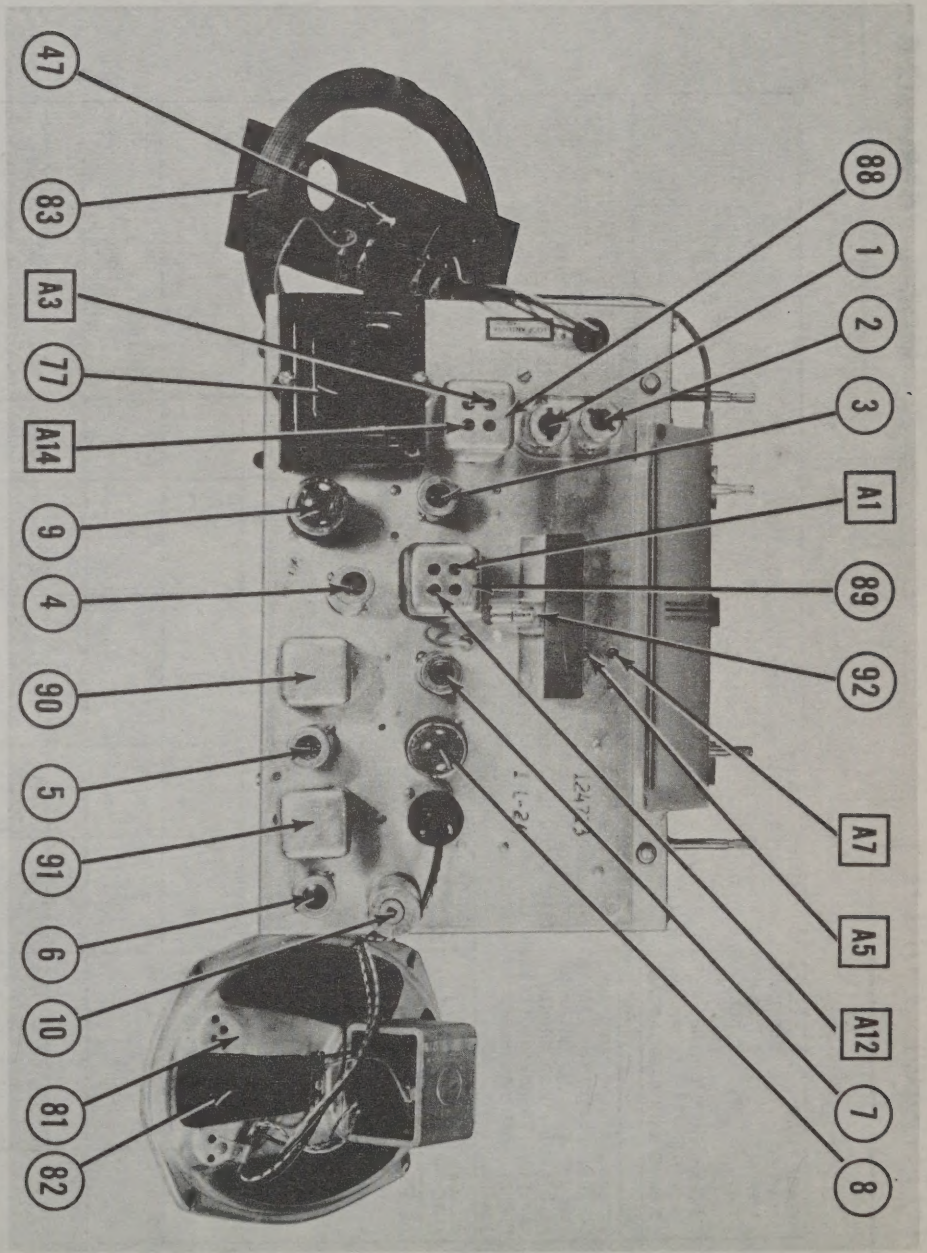
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	20	450	A-8C-10272	UP6CJ47	FP390	DY-3X15-450	EL-210	AF22J	■ Filter
B	10	450							▲ "
C	10	450					UT-20	PRS450-10	"
11	25	25	A-8C-11496	BR252A	TC26	M-25-25	TA-25	PRS25-25	Cath. Bypass
12	10	150	A-8C-11495	BR1215	TC42	M-10-150	UT-121	PRS150-12	Ratio Det. Bias
13	.05	600	C-8J-11388	DT6S5	TP415	S-6-05	TC-15	684-05	Line Bypass
14	.004	600	C-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	Output Plate Bypass
15	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
16	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
17	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
18	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	" "
19	.01	200	C-8D-11738	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
20	.004	600	C-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	Filament Bypass
21	.004	600	C-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	De-emphasis
22	.004	600	C-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	Filament Bypass
23	.05	200	C-8D-10770	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
24	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Audio Plate Bypass
25	180	500	C-8F3-116	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	IF Filter
26	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Screen Bypass Cer.
27	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Plate Decoup. Cer.
28	10000	300	C-8F9-20	1D3S1	MC475	MW.3-11	1FM-11	1467-01	IF Cath. Bypass
29	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Screen Bypass Cer.
30	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Plate Decoup. "
31	10000	300	C-8F9-20	1D3S1	MC475	MW.3-11	1FM-11	1467-01	IF Cath. Bypass
32	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Diode Filter
33	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	" "
34	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Screen Bypass Cer.
35	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Plate Decoup. Cer.
36	10000	300	C-8F9-20	1D3S1	MC475	MW.3-11	1FM-11	1467-01	IF Cath. Bypass
37	470	500	C-8F3-12	5W5T5	MC245	MO.5-347	1FM-35	1468-0005	AVC Filter
38	470	500	C-8F3-12	5W5T5	MC245	MO.5-347	1FM-35	1468-0005	IF Coupling
39	3000		C-8G-11486	1W5D3	MC461	MW.5-23	1FM-23	1467-003	Mixer Screen Bypass Cer.
40	3000		C-8G-11486	1W5D3	MC461	MW.5-23	1FM-23	1467-003	Mixer Plate Decoup. "
41	3000		C-8G-11486	1W5D3	MC461	MW.5-23	1FM-23	1467-003	Mixer Cath. Bypass "
42	3000		C-8G-11486	1W5D3	MC461	MW.5-23	1FM-23	1467-003	Osc. Plate Bypass Cer.
43	470	500	C-8F3-12	5W5T5	MC245	MO.5-347	1FM-35	1468-0005	Filament Bypass
44	50		C-8G-11484	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Capacitor Cer.
45	1		C-8G-12408						Osc. Coupling Cer.
46	470	500	C-8F3-12	5W5T5	MC245	MO.5-347	1FM-35	1468-0005	RF Coupling
47	1		C-8G-12408						" " Cer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
48A	1 Meg.	1	A-10B-11263	TM236	D19-137X	AT-103	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 48A per instructions
49A	500KΩ	1	A-11A-11262	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 49A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
50	1.5 Meg.	½	C-9B1-32	BTS-1.5 Meg.	Br.-Grn.-Grn. Mixer Grid
51	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Yl. Oscillator Grid
52	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red Oscillator Plate Load
53	1 MΩ	5	B-9C-11486	AB-1M	Voltage Dropping
54	18 KΩ	½	C-9B1-87	BTS-18K	Br.-Red-Yl. Converter Screen Dropping
55	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red Converter Plate Decouplin.
56	820Ω	½	C-9B1-61	BTS-820	Gray-Red-Yl. Converter Cathode
57	5.6 Meg.	½	C-9B1-107	BTS-5.6 Meg.	Grn.-Blue-Grn. FM-AVC Network
58	1 Meg.	½	C-9B1-81	BTS-1 Meg.	Br.-Blk.-Grn. AM-AVC Network
59	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. 1st IF Grid
60	100Ω	½	C-9B1-50	BW-½-100	Br.-Blk.-Br. 1st IF Cathode
61	82 Ω	½	C-9B1-73	BTS-8200	Gray-Red-Red 1st IF Screen Dropping
62	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
63	680KΩ	½	C-9B1-96	BTS-680K	Blue-Gray-Yl. Diode Load
64	470Ω	½	C-9B1-58	BTS-470	Yl.-Vi.-Br. 2nd IF Cathode
65	47KΩ	1	C-9B2-82	BTA-47K	Yl.-Vi.-Or. 2nd IF Screen Dropping
66	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
67	18KΩ	½	C-9B1-77	BTS-18K	Br.-Gray-Or. 3rd IF Transformer Shunt
68	220Ω	½	C-9B1-84	BW-½-220	Red-Red-Br. 3rd IF Cathode
69	33KΩ	1	C-9B2-81	BTA-33K	Or.-White-Or. 3rd IF Screen Dropping
70	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red 3rd IF Plate Decoupling
71	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Or. De-emphasis
72	27KΩ	½	C-9B1-79	BTS-27K	Red-Vi.-Or. Ratio Detector Bias Network
73	470KΩ	½	C-9B1-94	BTS-470K	Yl.-Vi.-Yl. FM-AVC Network
74	47KΩ	½	C-9B1-23	BTS-47K	Yl.-Vi.-Or. Tone Compensation
75	10 Meg.	½	C-9B1-37	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
76	220KΩ	½	C-9B1-27	BTS-220K	Red-Red-Yl. AF Plate Load
77	470KΩ	½	C-9B1-84	BTS-470K	Yl.-Vi.-Yl. Output Grid
78	270Ω	½	C-9B1-86	BW-½-270	Red-Vi.-Br. Output Cathode
95	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red 1st IF Plate Decoupling

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRLINE PART No.	STANCOR PART No.	THORDARSON PART No.	UTAH PART No.
79	117V AC @ .75A	700V CT @ .107A	6.3V AC @ 2.7A	6.3V AC @ 2.7A	B-12A-11256		T22R04*	*Drill new mounting holes.

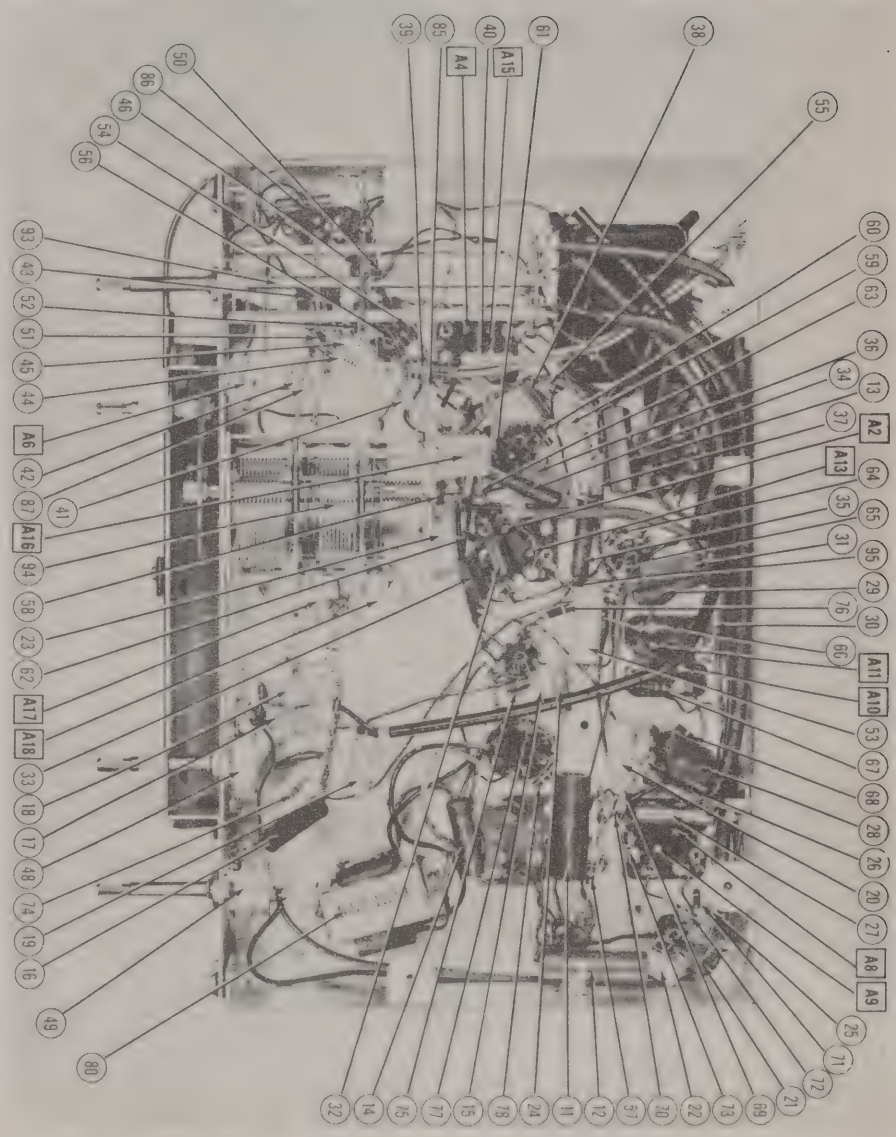
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
80	5.9Ω	4.1Ω	310Ω	.4Ω	B-12C-11253	A-3877	T22S46		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.				
81	520Ω	4.1Ω	C-16B-12404			
	2.5K Min.	VC DIA.				
	6" x 9"	13/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

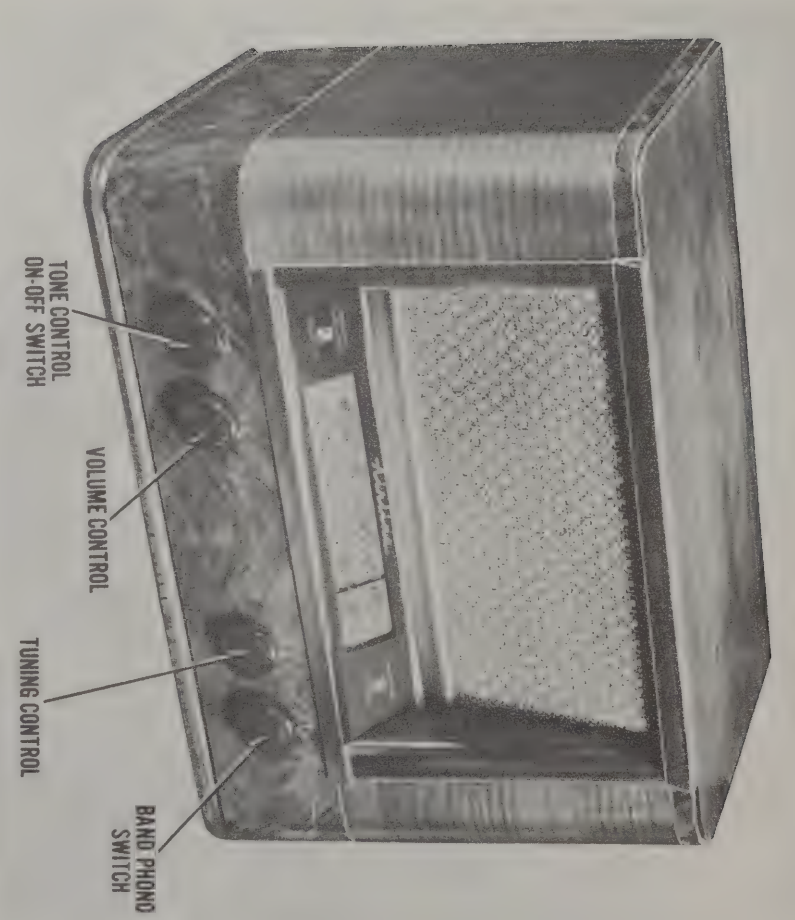
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA MEISSNER PART No.	
83	Loop Ant.					
84	FM Ant.					
				A-13E-11284		Items 85A, 85B & 85C are wound on same form but Item 85C is contained separately.
C	FM Ant.Coil,					
86	BC Osc. Coil		52	A-13D-11285		
						Items 88A & 88B are in same can.
B	FM " "					
89A	AM OutputIF			C-203-11746		Items 89A & 89B are in same can.
B	FM Inter.IF					
90	FM OutputIF			C-203-11744		
91	Ratio Det.					

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIRLINE PART No.		INSTALLATION NOTES
	Bayonet	6-8	0.25	Blue	A-46A-11739		

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
83	Switch		Band-Phono
84	Coil Can	B-CA-11275	
A5	Dual Trimmer	A-8E-12557	BC Osc. Adj.
A7			BC Ant. Adj.
A6	Trimmer	A-8E-12177	BC Osc. Padder
A16	"	A-8E-11506	FM Wave Trap
A17	"	A-8E-11279	FM Osc. Adj.
A18	"	A-8E-12076	FM Ant. Adj.
	Dial Scale		
	Dial Pointer		



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

* READINGS TAKEN IN F M POSITION

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
	1	6BA6	-2.3V.DC	0V.	0V.	6.5V.AC	260V.DC	57V.DC	2V.DC	
	2	6C4	115V.DC	0V.	0V.	6.5V.AC	115V.DC	-.6V.DC	0V.	
	3	6BA6	-.1V.DC	0V.	0V.	6.5V.AC	260V.DC	107V.DC	1.2V.DC	
*	4	6BA6	0V.	0V.	0V.	6.5V.AC	255V.DC	138V.DC	4.4V.DC	
*	5	6BA6	0V.	0V.	0V.	6.5V.AC	240V.DC	120V.DC	3V.DC	
*	6	6AL5	-3V.DC	-2V.DC	0V.	6.5V.AC	0V.	0V.	-2.2V.DC	
	7	6AT6	-6V.DC	0V.	0V.	6.5V.AC	-.4V.DC	0V.	107V.DC	
	8	6V6 GT	0V.	6.5V.AC	260V.DC	260V.DC	0V.	0V.	0V.	15V.DC
	9	5Y3GT	0V.	330V.DC	0V.	310V.DC	0V.	310V.AC	112V.AC	330V.DC

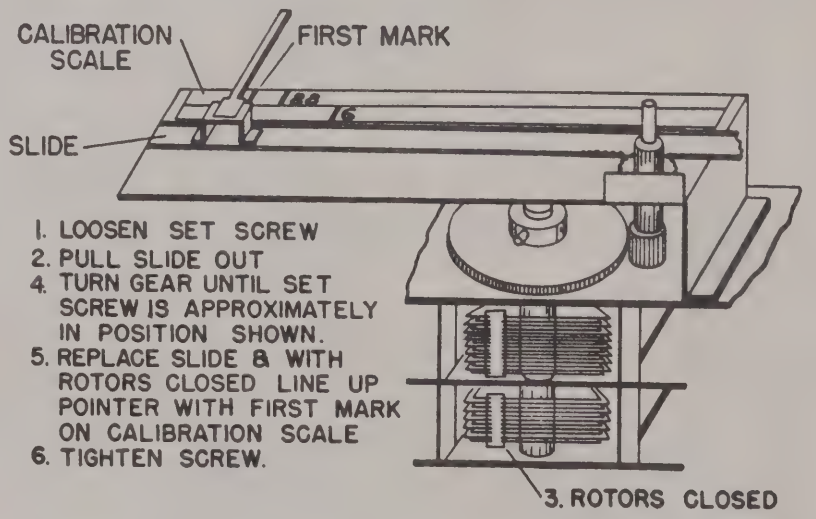
RESISTANCE READINGS

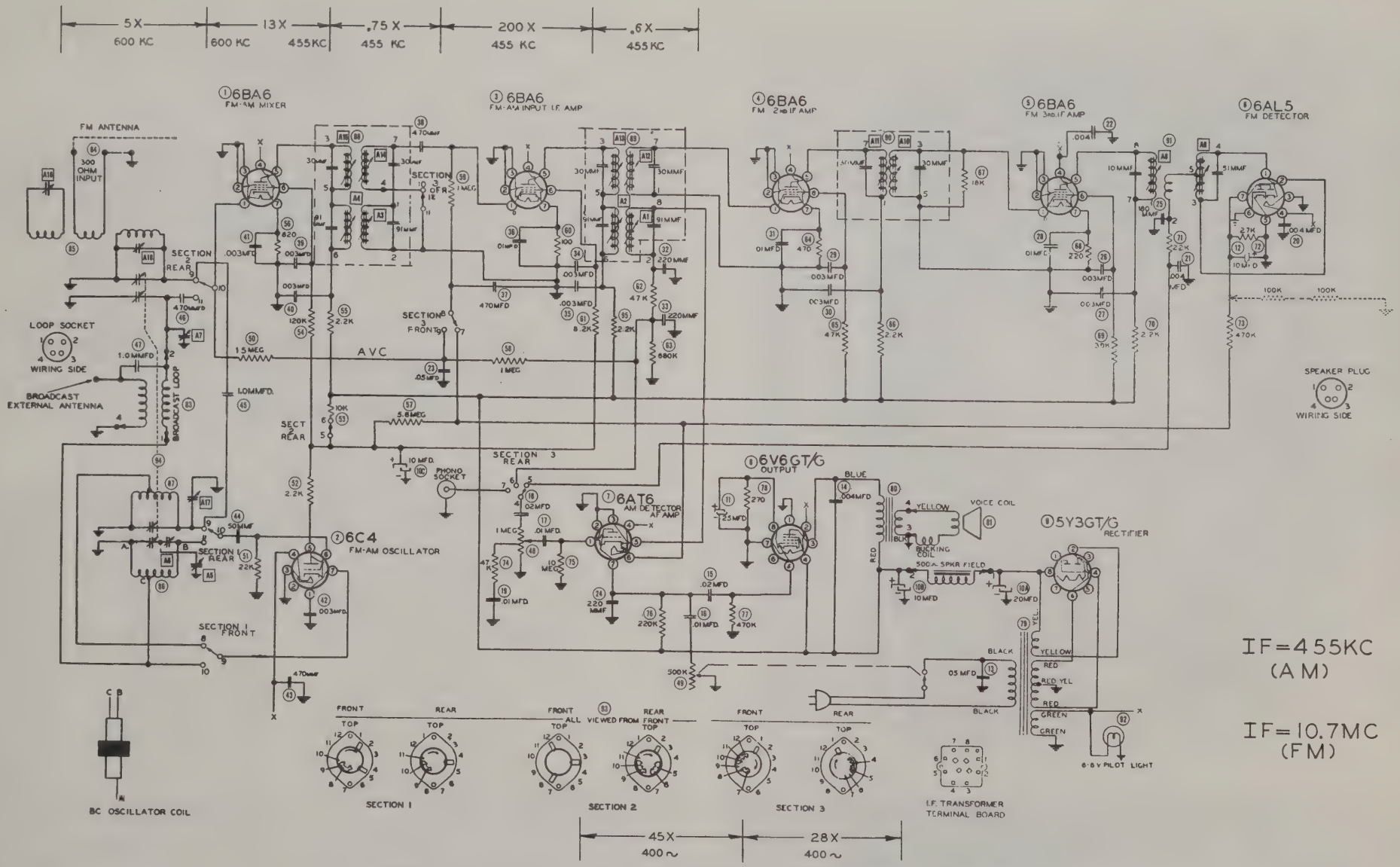
	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
	1	6BA6	3 MEG.	0Ω	0Ω	.1Ω	130 KΩ	270 KΩ	800 Ω	
	2	6C4	142 KΩ	INF.	0Ω	.1Ω	142 KΩ	20 KΩ	.5Ω	
	3	6BA6	2.5MEG.	0Ω	0Ω	.1Ω	130 KΩ	150 KΩ	100 Ω	
*	4	6BA6	.5Ω	0Ω	0Ω	.1Ω	130 KΩ	180 KΩ	460 Ω	
*	5	6BA6	.5Ω	0Ω	0Ω	.1Ω	130 KΩ	170 KΩ	220Ω	
*	6	6AL5	INF.	INF.	0Ω	.1Ω	0Ω	0Ω	25 KΩ	
	7	6AT6	10 MEG.	0Ω	0Ω	.1Ω	720 KΩ	470 KΩ	350 KΩ	
	8	6V6 GT	0Ω	.1Ω	130 KΩ	130 KΩ	430 KΩ	INF.	0Ω	270 Ω
	9	5Y3GT	0Ω	130 KΩ	INF.	110 Ω	INF.	105Ω	INF.	130 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROCEDURE FOR DISASSEMBLY AND ASSEMBLY OF DIAL MECHANISM


CALIBRATION SCALE
FIRST MARK
SLIDE
1. LOOSEN SET SCREW
2. PULL SLIDE OUT
4. TURN GEAR UNTIL SET SCREW IS APPROXIMATELY IN POSITION SHOWN.
5. REPLACE SLIDE & WITH ROTORS CLOSED LINE UP POINTER WITH FIRST MARK ON CALIBRATION SCALE
6. TIGHTEN SCREW.
3. ROTORS CLOSED



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

ALGENE
MODEL AR5U

ALGENE
MODEL AR5U

ALGENE MODEL AR5U

TRADE NAME	Algene, Model AR5U
MANUFACTURER	Algene Radio Corp., 305 Throop Ave., Brooklyn, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	530-1700KC RATING .240 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1700KC	1700KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

ALGENE MODEL AR5U

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ALGENE PART No.	STANDARD REPLACEMENT		
1	Converter	14A7	14A7	8AL	
2	IF Amp.	14A7	14A7	8V	
3	Det.-AVC-AF	14B6	14E6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ALGENE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	20	150		SRD2215	2N5C9	M-2x20-150	TA-220	PRSA150-20-20	Filter
B	20	150							"
7	40	150		BR4015	TC48	M-40-150	UT-401	PRS150-40	"
8	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
9	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
10	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
11	.002	150		DT6D2	TP405	S-6-002	TC-22	484-002	" "
12	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
13	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Audio Plate Bypass
14	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	IF Bypass Vol. Cont.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	ALGENE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	500KΩ	1		MR49	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 15A per instructions
C	Switch			M26	41	SW-A	" " " " "

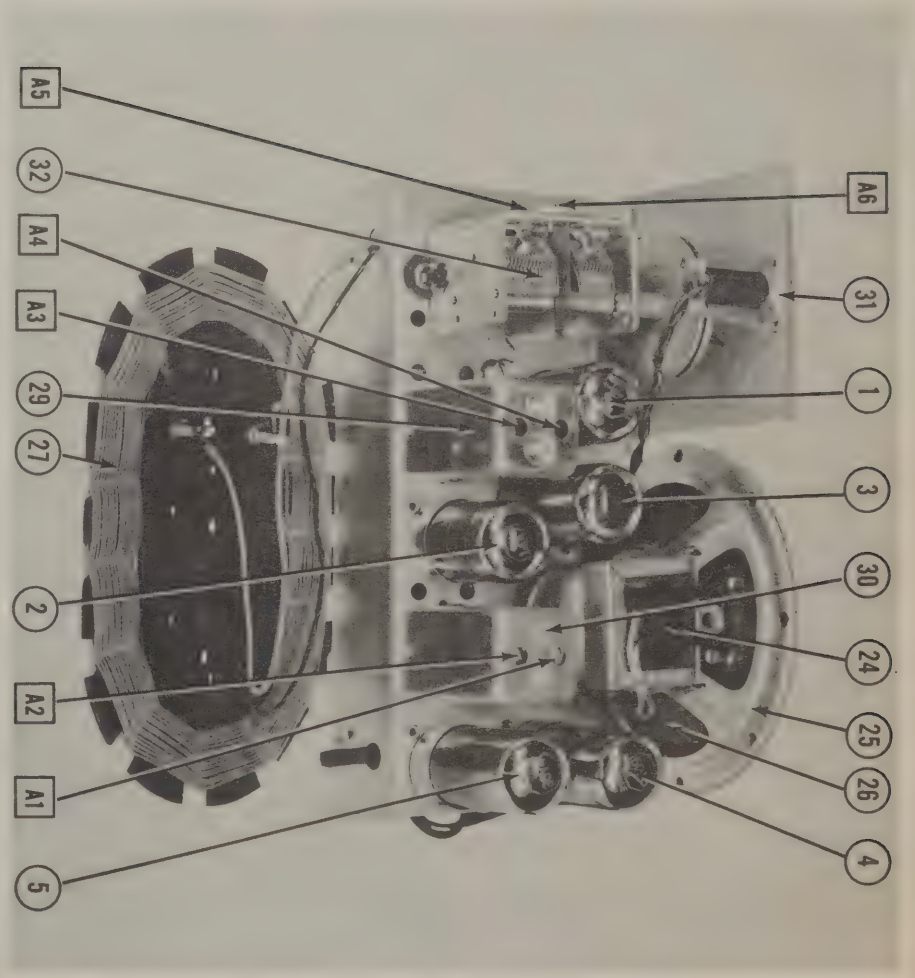
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ALGENE PART No.	IRC PART No.	
16	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
17	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
18	2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AF Grid
19	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
20	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
21	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
22	1400Ω	1		BTA-1200	Br.-Yl.-Red Filter
23	150Ω	1		BW-1-150	Br.-Grn.-Br. "

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ALGENE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
24	2000Ω	3.1Ω	100Ω	.4Ω		A-3876*	T22S45*		*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ALGENE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107		
25	PM	3.1Ω		Mod. P5-V		
	CONE DIA.	VC DIA.				
26	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

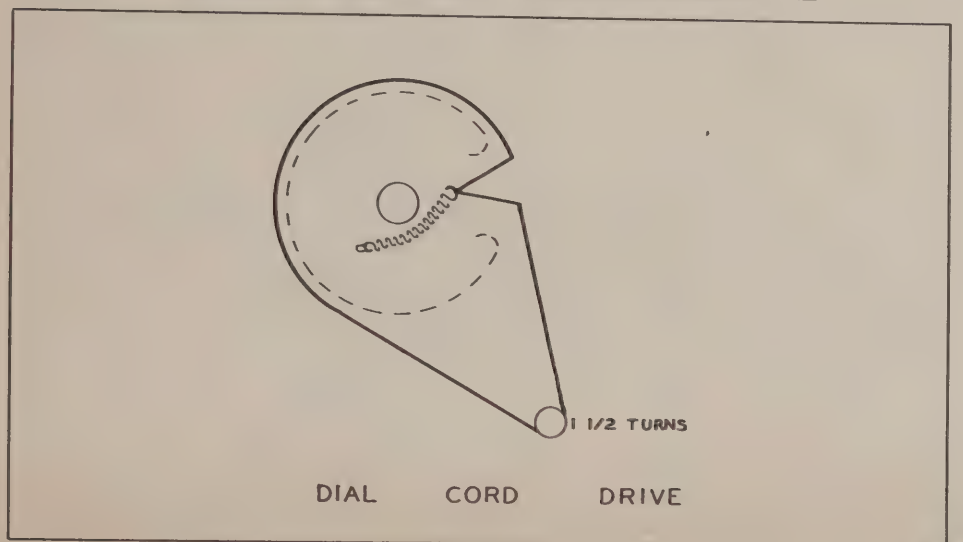
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ALGENE PART No.	MEISSNER PART No.	
27	Loop Ant.		1.3Ω			
28	Osc. Coil		9Ω		14-1040	Add 50MMFD from grid to high side tuning cap.
29	Input IF	16Ω	16Ω		16-6658	
30	Output IF	14.5Ω	15Ω		16-6660	

DIAL LIGHT

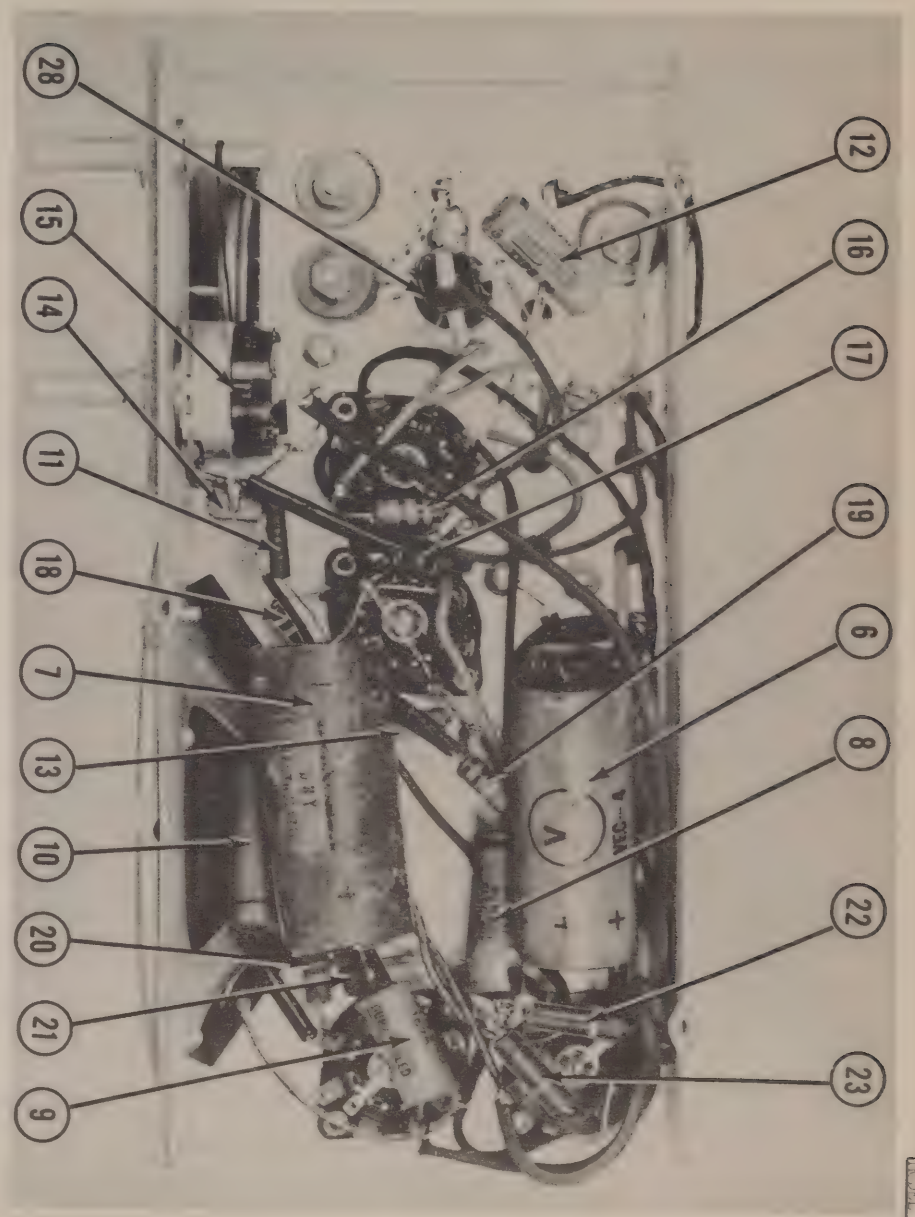
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ALGENE PART No.		
31	Bayonet	6-8	0.15	Brown			Type 47

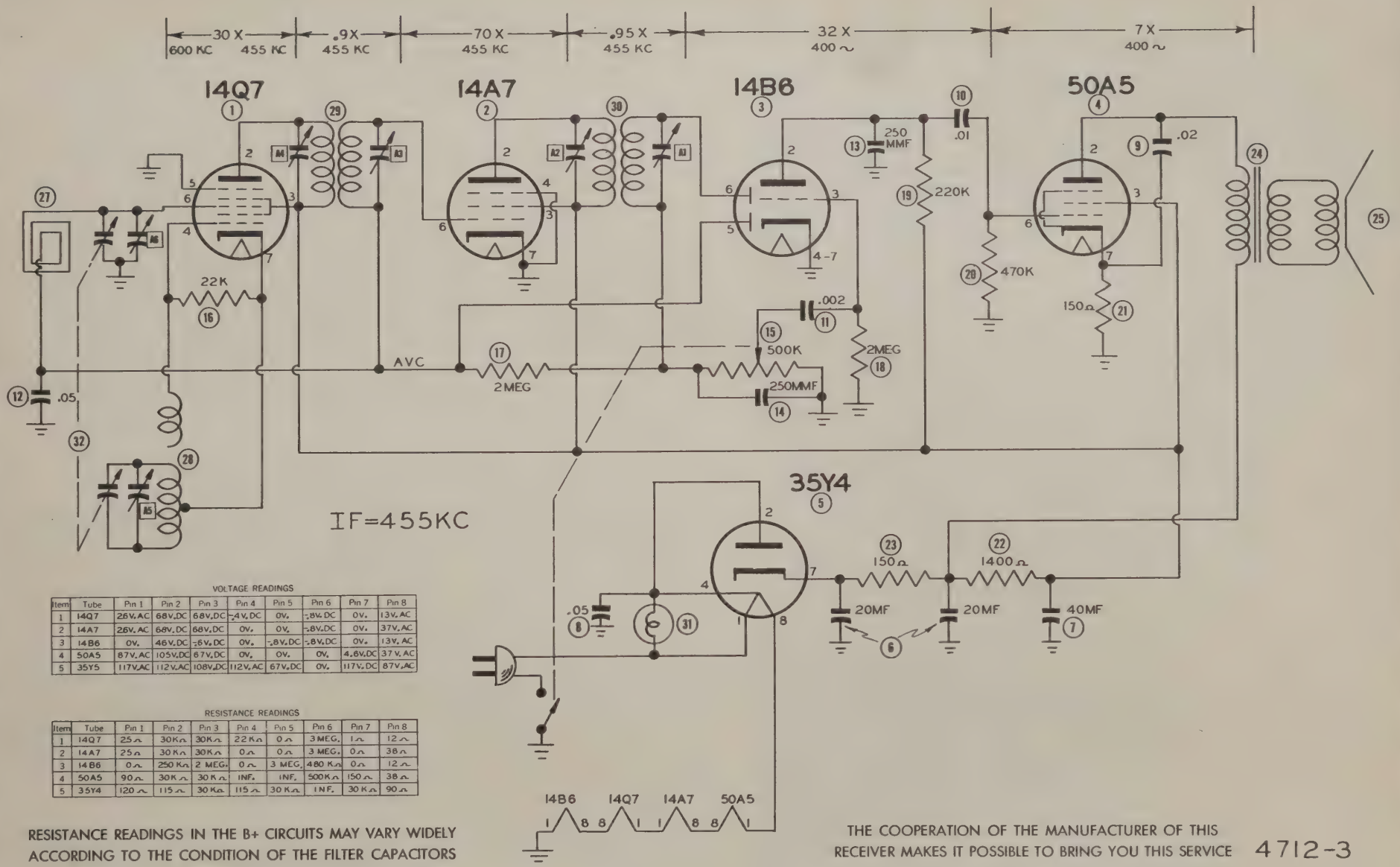
MISCELLANEOUS

ITEM No.	PART NAME	ALGENE PART No.	NOTES
32	2 Gang Var. Cap.		37-516 MMF, 38-198 MMF



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	26V.AC	68V.DC	68V.DC	-.4V.DC	0V.	-.8V.DC	0V.	13V.AC
2	14A7	26V. AC	68V. DC	68V.DC	0V.	0V.	-.8V.DC	0V.	37V.AC
3	14B6	0V.	46V.DC	-.6V. DC	0V.	-.8V.DC	-.8V.DC	0V.	13V. AC
4	50A5	87V.AC	105V.DC	87V.DC	0V.	0V.	0V.	4.6V.DC	37 V. AC
5	35Y5	117V.AC	112V.AC	108V.DC	112V.AC	67V.DC	0V.	117V.DC	87V.AC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	25Ω	30KΩ	30KΩ	22KΩ	0Ω	3 MEG.	1Ω	12Ω
2	14A7	25Ω	30KΩ	30KΩ	0Ω	0Ω	3 MEG.	0Ω	38Ω
3	14B6	0Ω	250KΩ	2 MEG.	0Ω	3 MEG.	480 KΩ	0Ω	12Ω
4	50A5	90Ω	30KΩ	30KΩ	INF.	INF.	500KΩ	150Ω	38Ω
5	35Y4	120Ω	115Ω	30KΩ	115Ω	30KΩ	INF.	30KΩ	90Ω

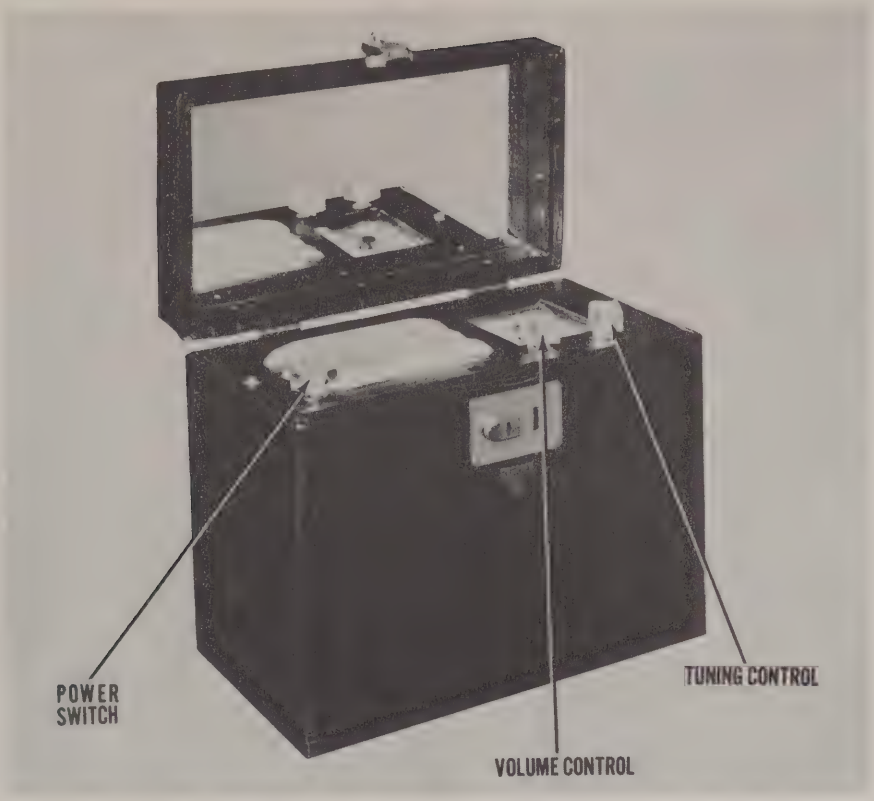
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE 4712-3

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ALGENE
MODEL AR-6U (BATTERY OPERATED)



ALGENE
MODEL AR-6U (BATTERY OPERATED)

ALGENE MODEL AR-6U

TRADE NAME	Algene, Model AR-6U
MANUFACTURER	Algene Radio Corp., 305 Throop Ave., Brooklyn, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 1R5 Converter, 1T4 IF Amp., 1T4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output, 117Z3 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC or 7.5 Volt "A" Supply & 90 Volt "B" Supply in Pack Form
POWER SUPPLY	.170 Amp. @ 117 Volts AC or 52 MA @ 7.6 Volts DC & 17MA @ 90 Volts DC
TUNING RANGE—BROADCAST	530-1700KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy ant. to 200MMF to reduce hum modulation.
2		Loop	1400KC	1400KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

ALGENE MODEL AR-60

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ALGENE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	IF Amp.	1T4	1T4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power Output	3Q4	3Q4	7BW	
6	Rectifier	117Z3	117Z3	4BR	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ALGENE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150		EZ5515	2N521	DSB-2x50-150	TA-505	PRSA150-50-50	Filter - Red
7B	50	150							" - "
8	100	25		BRH251	TC2501	M-100-25	UHC-102	PRS25-100	Filament Bypass
9	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
10	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Output Plate Bypass
11	.006	600		DT6D6	TP409	S-6-006	TC-26	684-006	Audio Coupling
12	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Audio Screen Bypass
13	.002	100		DT6D2	TP405	S-6-002	TC-22	484-002	Audio Coupling
14	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Filament Bypass
15	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	" "
16	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
17	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	RF Bypass Pwr. Supp.
18	250	500		5W5T25	MC240	M0.5-325	1FM-325	1468-00025	Diode Filter
19	250	500		5W5T25	MC240	M0.5-325	1FM-325	1468-00025	IF Coupling
20	250	500		5W5T25	MC240	M0.5-325	1FM-325	1468-00025	Audio Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ALGENE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	1 Meg.	1		UM1S6	D11-137	M-51-S	Volume Control
21B	Short			Not Req.	"	Not Req.	Attach to 21A per instructions

RESISTORS

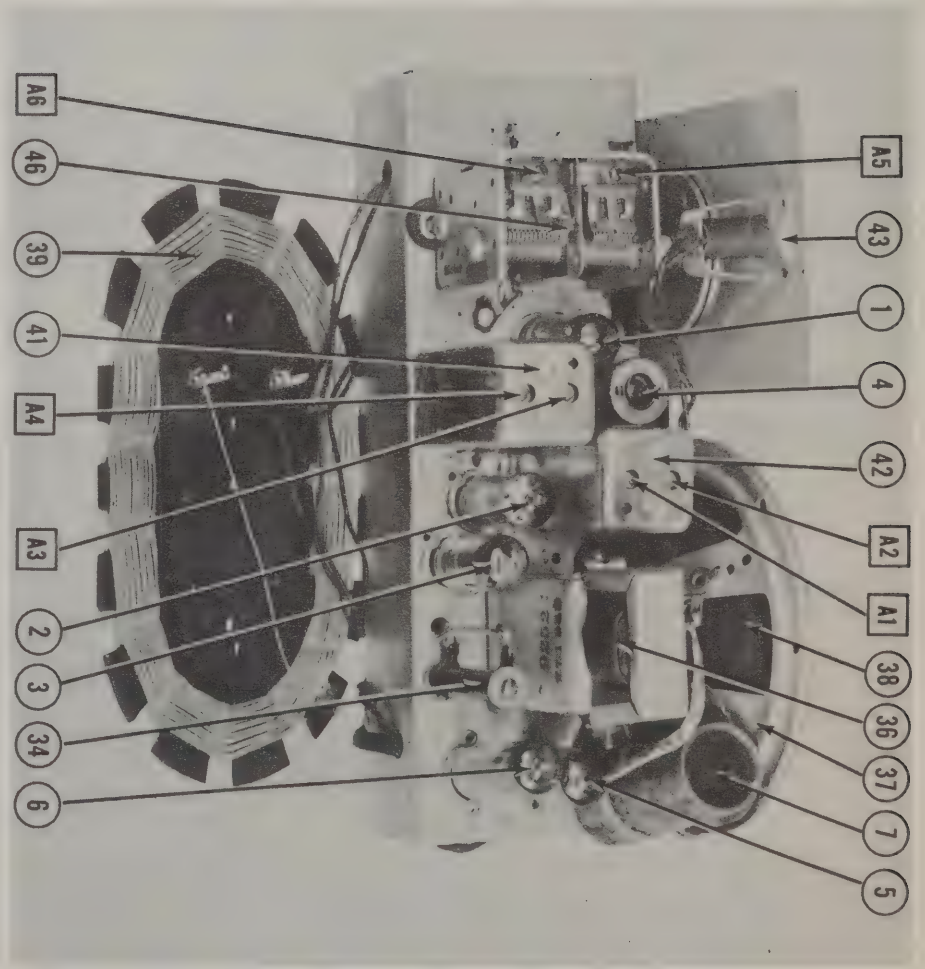
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ALGENE PART No.	IRC PART No.	IDENTIFICATION CODES
22	100K	1/2		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
23	5.6 Meg.	1/2		BTS-5.6 Meg.	Grn.-Blue-Grn. AVC Network
24	22KΩ	1/2		BTS-22K	Red-Red-Or. 1st IF Plate Load
25	47KΩ	1/2		BTS-47K	Yl.-Vi.-Or. 2nd IF Grid
26	10 Meg.	1/2		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
27	3.3 Meg.	1/2		BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
28	470KΩ	1/2		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
29	470KΩ	1/2		BTS-470K	Yl.-Vi.-Yl. Output Grid Outp
30	5600Ω	1/2		BTS-5600	Grn.-Blue-Red Screen Dropping
31	560Ω	1/2		BTS-560	Grn.-Blue-Br. Filament String
32	240Ω	2		BW-½-220	Red-Yl.-Br. Filament String
33	2200Ω	2		BT-2-2200	Red-Red-Red Filter
34	225Ω	10		AMA-250	Filament String-See Note
35	50Ω	1		BW-1-47	Grn.-Blk.-Blk. Pilot Light Shunt

Note-On IRC replacement set slider at 225Ω from one end.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ALGENE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
36	7400Ω	4-16Ω	700Ω	.4Ω		A-8975*	TS2S45*		*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ALGENE PART No.	JENSEN PART No.		INSTALLATION NOTES
37	FIELD PM	VC IMP. 3.2Ω		ST-107 Mod. P8-V		
38	CONE DIA. 4-5/8"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ALGENE PART No.	MEISSNER PART No.	
39	Loop Ant.		1.2Ω			
40	Osc. Coil	.6Ω	7Ω		14-1040	Add 50MMFD from grid to high side tuning cap.
41	Input IF	14Ω	4.2Ω		16-6656	
42	Output IF	16Ω	15Ω		16-6660	

DIAL LIGHT

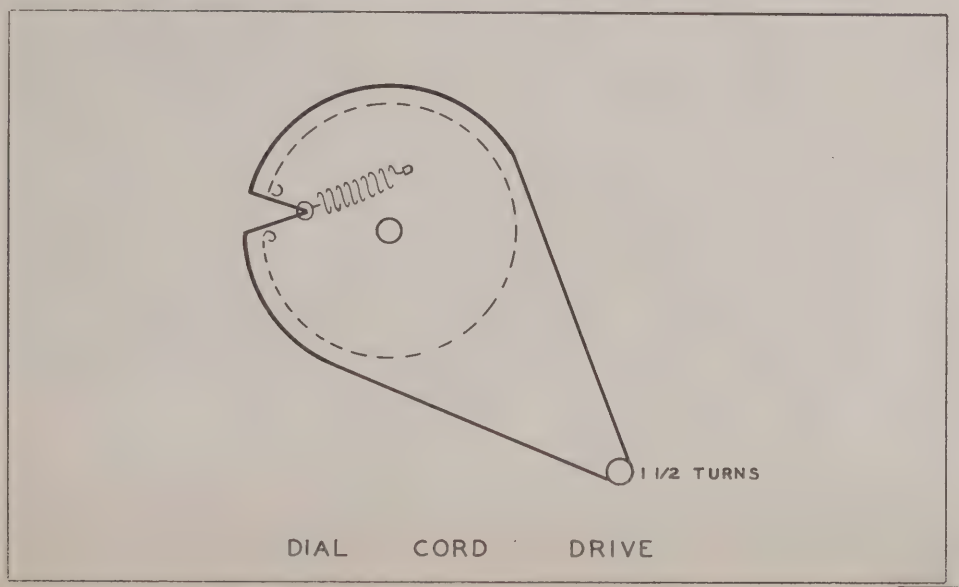
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ALGENE PART No.		INSTALLATION NOTES
43	Bayonet	6-8	0.1	Brown			Type 47

BATTERIES

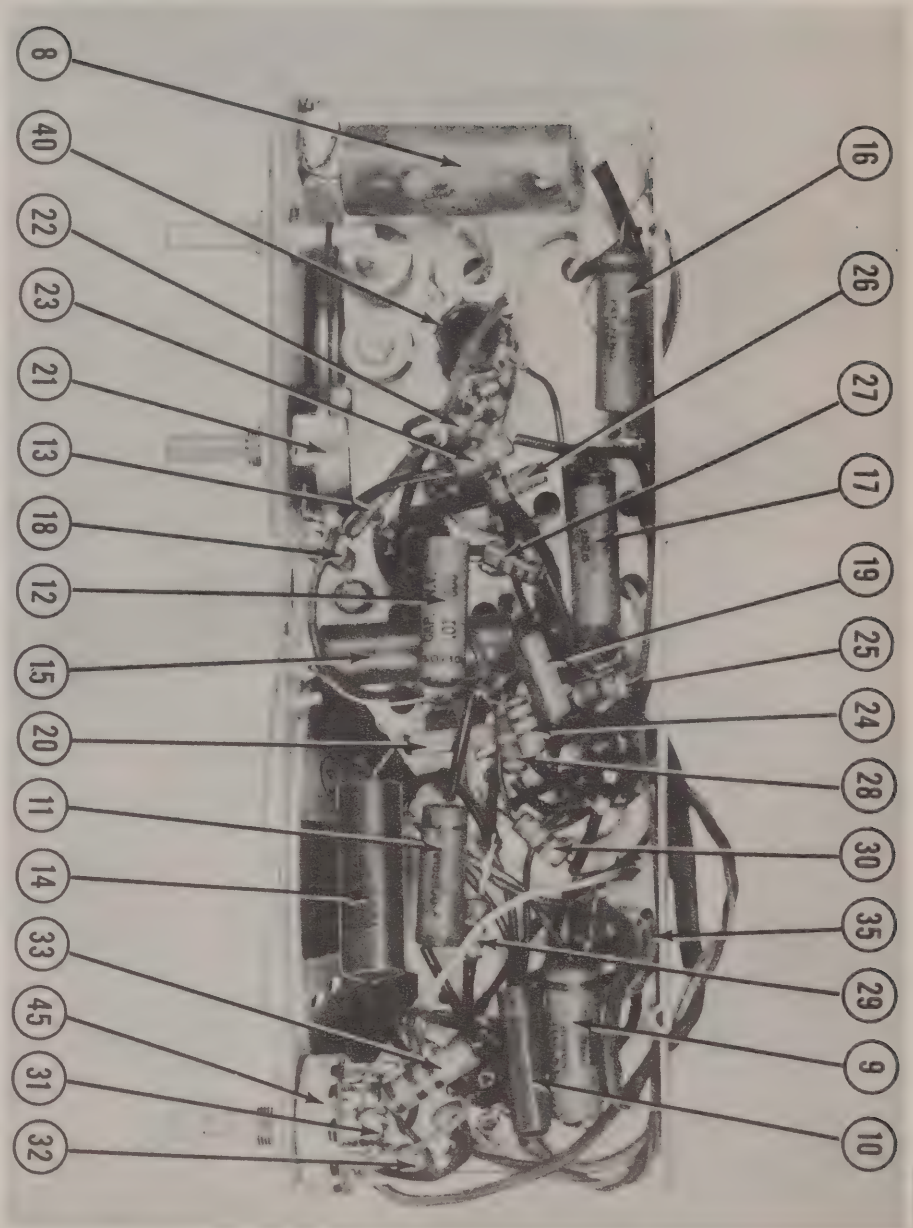
ITEM No.	VOLTAGE	ALGENE PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
44	7.5V "A" 90V "B"				#754	

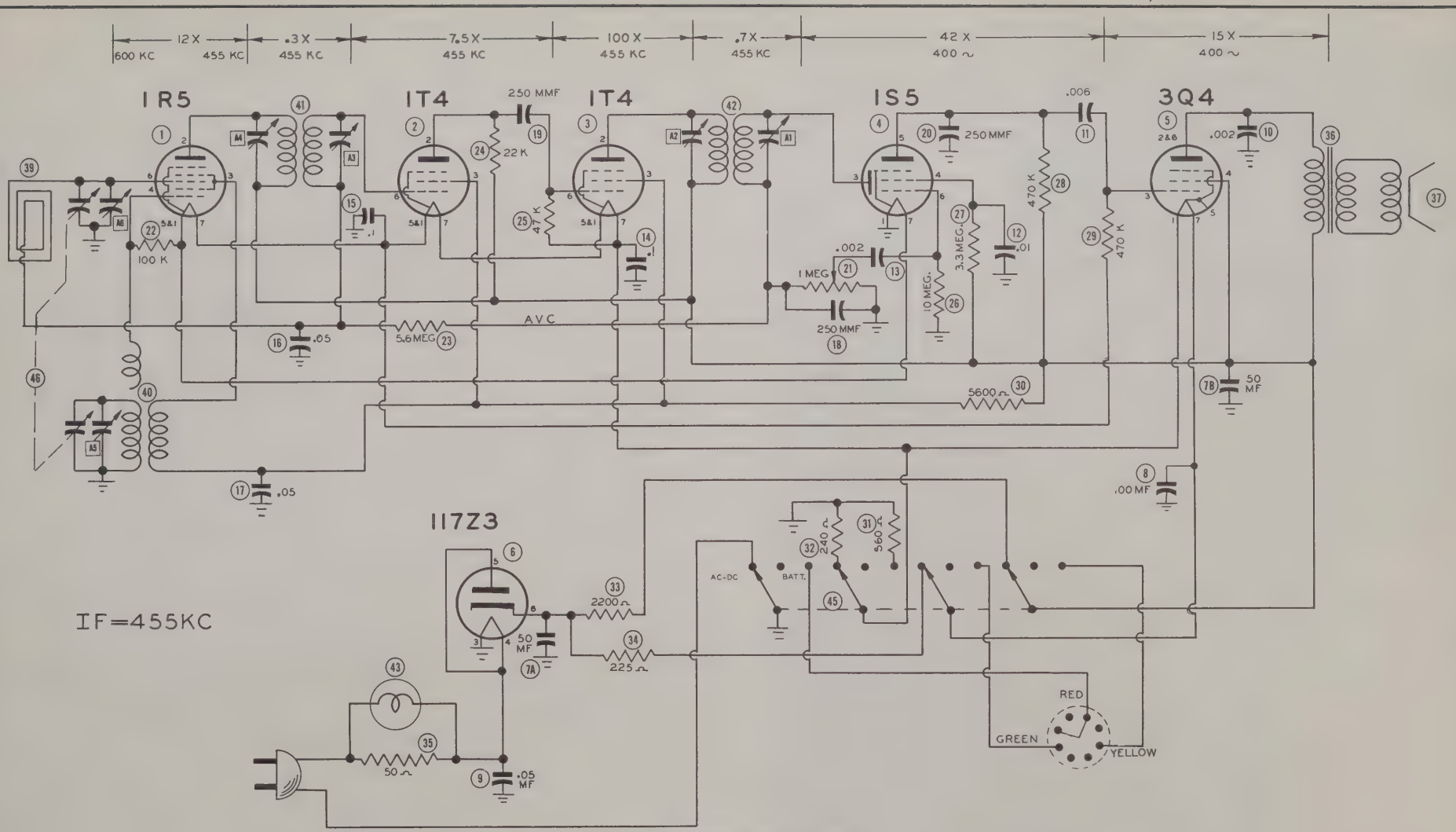
MISCELLANEOUS

ITEM No.	PART NAME	ALGENE PART No.	NOTES
45	Switch		Power Selector
46	2 Gang Var. Cap.		40-523 MMF, 30-190 MMF



CHASSIS—BOTTOM VIEW





VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	42V. DC	78V. DC	58V. DC	.7V. DC	1.2V. DC	0V.	2.2V. DC
2	1T4	2.2V. DC	56V. DC	58V. DC	78V. DC	2.2V. DC	0V.	3.3V. DC
3	1T4	3.3V. DC	78V. DC	58V. DC	76V. DC	3.3V. DC	3.3V. DC	4.3V. DC
4	1S5	0V.	0V.	±5V. DC	78V. DC	23V. DC	0V.	1.2V. DC
5	3Q4	4.3V. DC	73V. DC	3V. DC	78V. DC	5.7V. DC	73V. DC	7V. DC
6	117Z3	113V. DC	0V.	0V.	113V. DC	113V. DC	115V. DC	0V.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	4.5 KΩ	10 KΩ	100 KΩ	*	6 MEG.	*
2	1T4	*	27 KΩ	10 KΩ	4.5 KΩ	*	6 MEG.	*
3	1T4	*	4.5 KΩ	10 KΩ	4.5 KΩ	*	47 KΩ	*
4	1S5	0Ω	INF.	900 KΩ	3.3 MEG.	475 KΩ	10 MEG.	*
5	3Q4	*	5 KΩ	560 KΩ	4.5 KΩ	*	5 KΩ	*
6	117Z3	370Ω	INF.	0Ω	370Ω	370Ω	22 KΩ	INF.

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

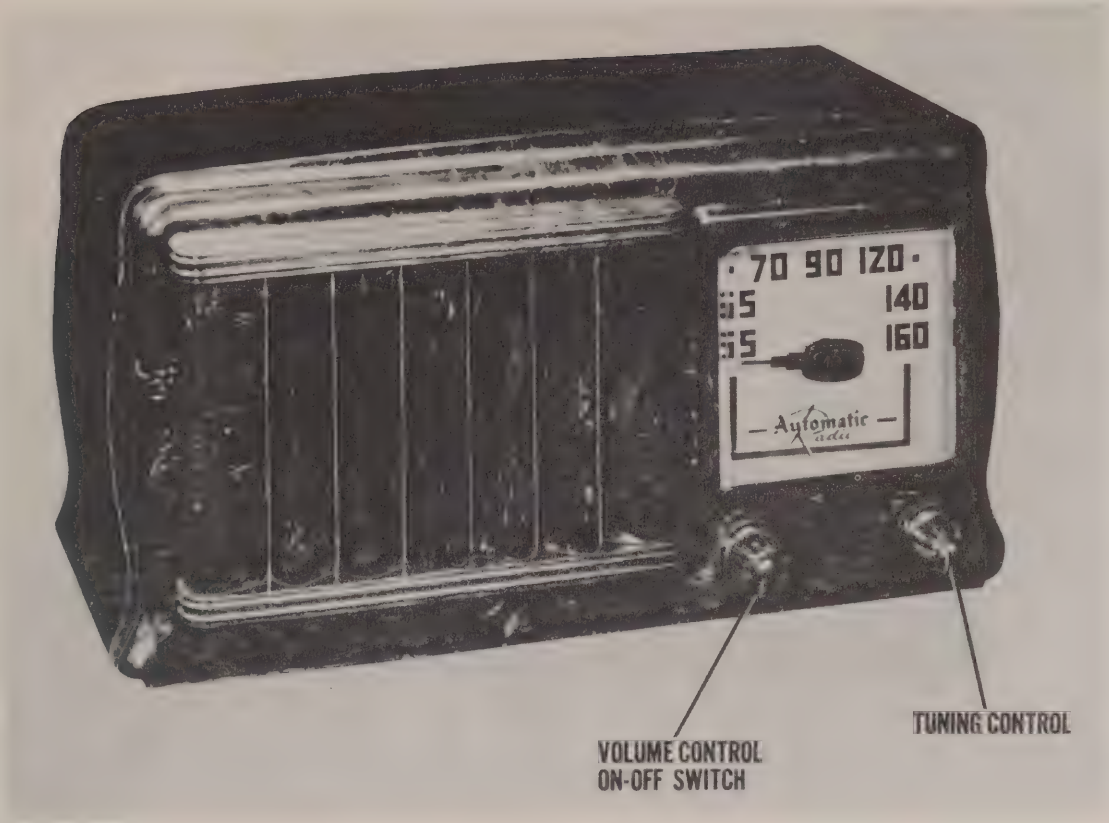
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4712-4

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to chassis during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

AUTOMATIC
MODELS 601, 602, (SERIES B)



AUTOMATIC
MODELS 601, 602, (SERIES B)

AUTOMATIC MODEL 601

TRADE NAME	Automatic, Model 601, 602 (Series "B")
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline, Ave., Boston, Mass.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50L6GT Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	538-1685 KC RATING .250 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to ext. ground lead.	1685KC	1685KC	"	A5	Adjust for maximum output.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

AUTOMATIC MODELS
601, 602 (Series B)

TUBES

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6	30	150		BR3015	TC47	M-30-150	UT-301	PRS150-30	Filter
7	30	150		BR3015	TC47	M-30-150	UT-301	PRS150-30	"
8	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	Line Filter
9	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Output Plate Bypass
10	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
11	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	" "
12	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
13	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Audio Grid Filter
14	500	500		5W5T5	MC245	MO.5-35	1FM-35	1468-0005	Diode Filter
15	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	250KΩ	1	RV-46	MR44*	D13-130*	M-64-Z*	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

*Install a 22KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft side, terminals, down.)

RESISTORS

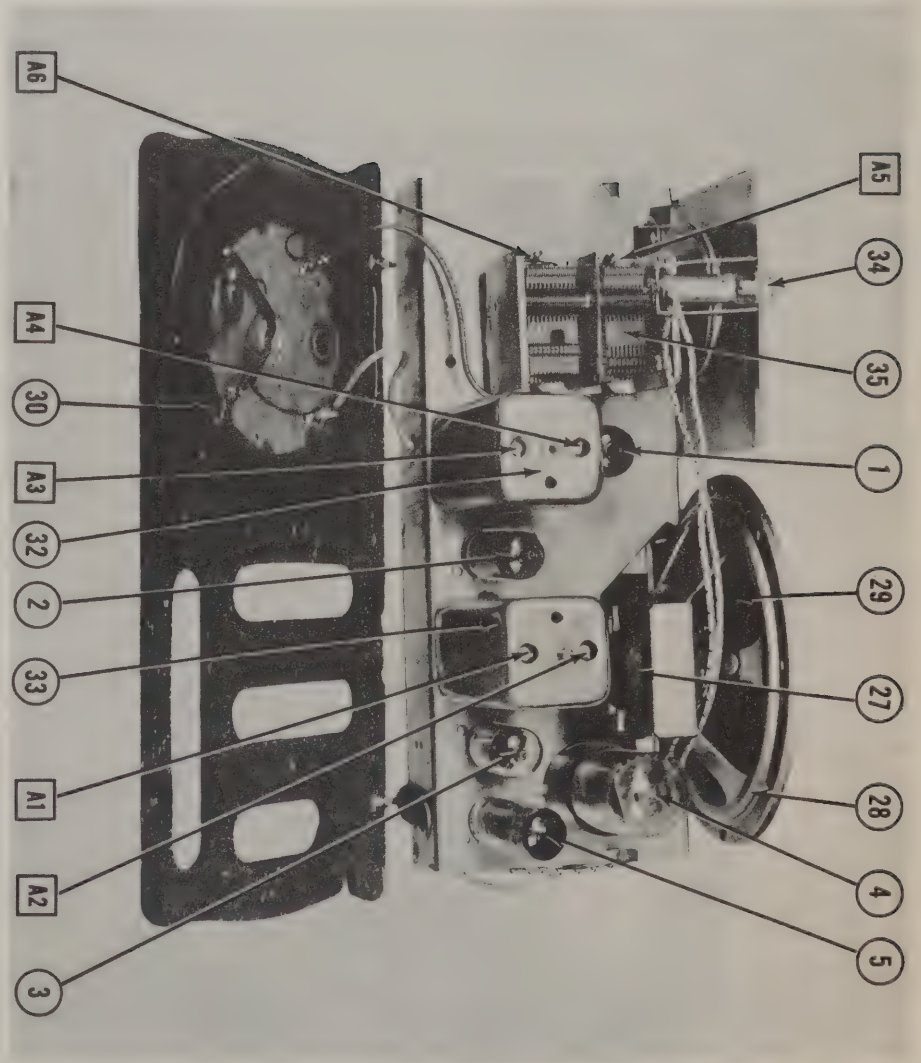
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	IDENTIFICATION CODES
17	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AVC Network-See Note 1
18	20KΩ	½		BTS-22K	Red-Blk.-Or. Oscillator Grid
19	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
20	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn. AF Grid-See Note 2
21	250KΩ	½		BTS-270K	Red-Grn.-Yl. AF Plate Load
22	560KΩ	½		BTS-560K	Grn.-Blue-Yl. Output Grid-See Note 3
23	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
24	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter - See Note 4
25	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter - See Note 4
26	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Rectifier Ballast - See Note 1

Note 1 - Not used in all models.
Note 2 - Some models use 5 Meg. in this application. IRC replacement BTS-4.7 Meg.
Note 3 - Some models use 500KΩ in this application. IRC replacement BTS-470K.
Note 4 - Some models use 1500Ω in this application. IRC replacement BTA-1500.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AUTOMATIC PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
27	2300Ω	3.1Ω	160Ω	.5Ω	Part of PM-700	A-3870†	T22S45†		†Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AUTOMATIC PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
28	PM	3.1Ω	PM-700	Mod. P5-X		
	CONE DIA.	VC DIA.				
29	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

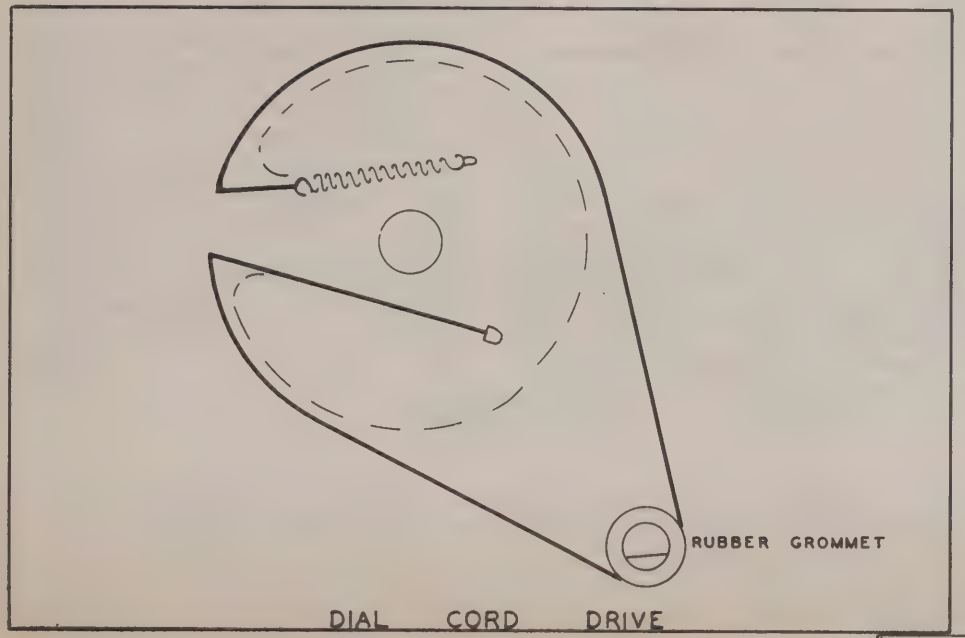
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AUTOMATIC PART No.	MEISSNER PART No.	
30	Loop Ant.	0Ω	1.5Ω			
31	Osc. Coil		6Ω		14-1040	
32	Input IF	16Ω	15.5Ω		16-6658	
33	Output IF	16Ω	15.5Ω		16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AUTOMATIC PART No.		INSTALLATION NOTES
34	Bayonet	6-8	0.15	Brown			Type 47

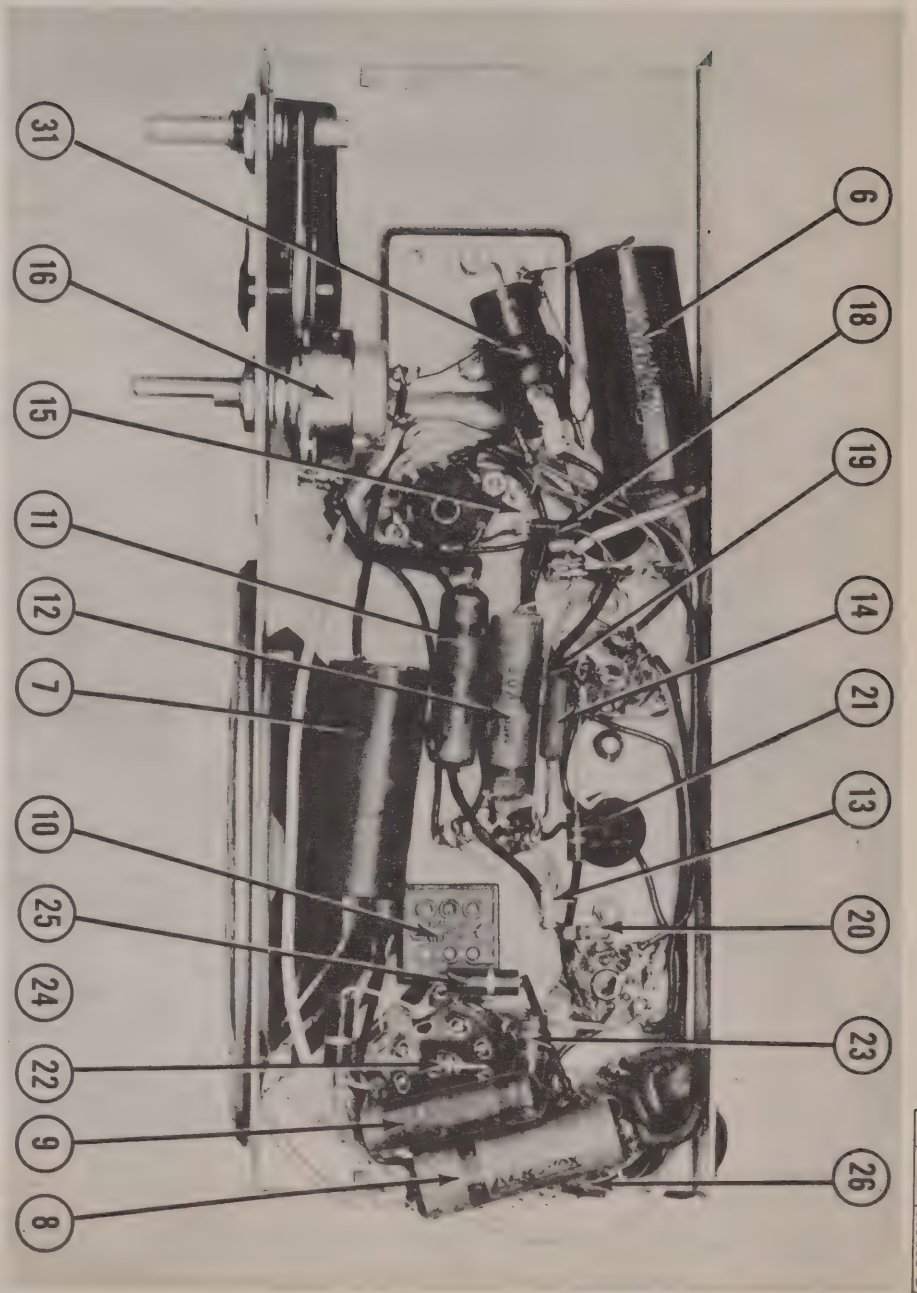
MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
35	2 Gang Var. Cap.		21-387 MMF, 32-201 MMF

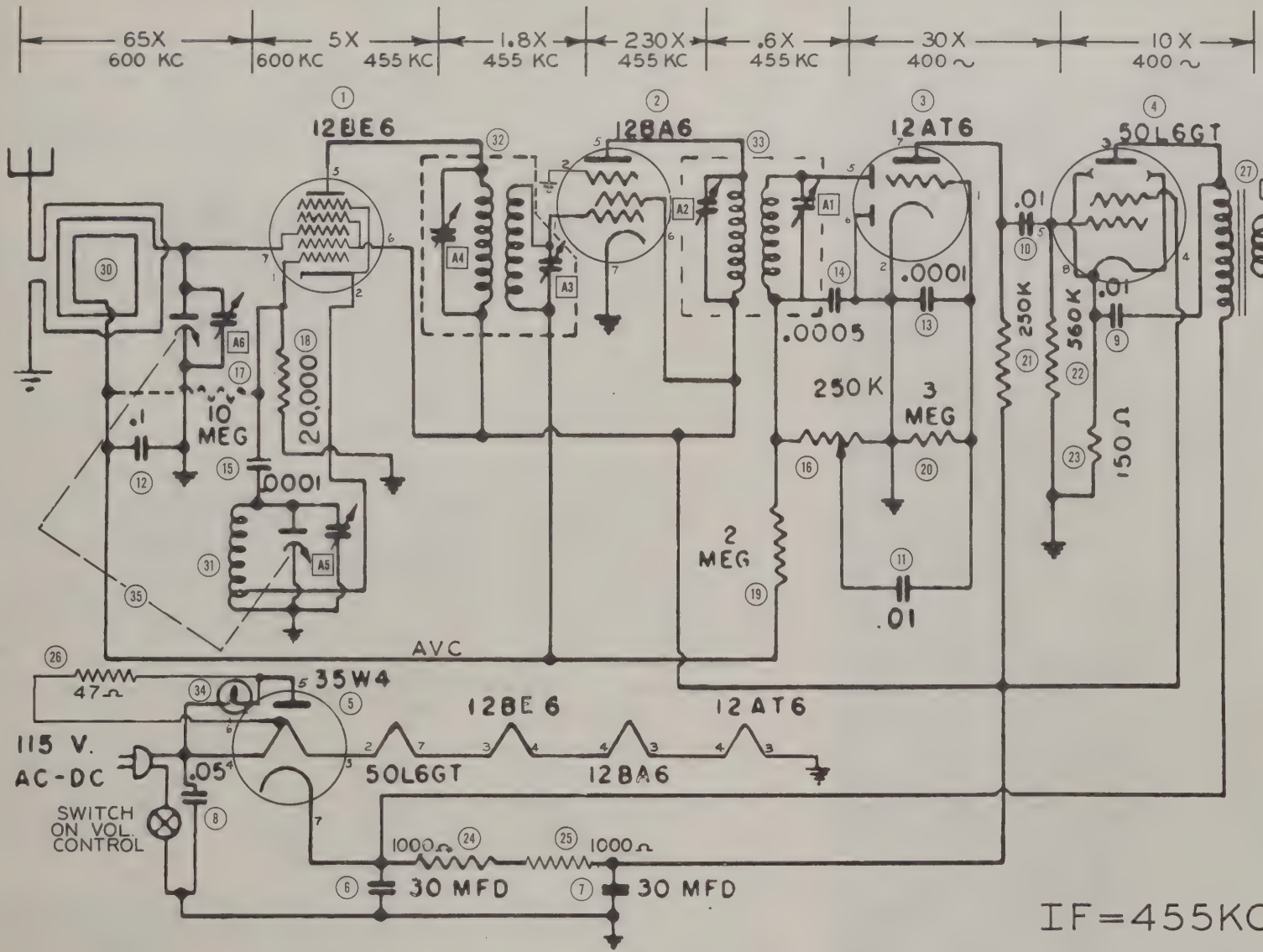


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



AUTOMATIC MODELS
601, 602 (Series B)



IF=455KC

Pin No.	12BE6 Volt.	12BE6 Res	12BA6 Volt	12BA6 Res
1	-6.7V.DC	19 KΩ	-6 V. DC	2 MEG.
2	0V.	.6Ω	0V.	0Ω
3	37V.AC	34Ω	12V.AC	12Ω
4	25V.AC	24Ω	25V.AC	24Ω
5	77V.DC	80KΩ	77V.DC	80KΩ
6	77V.DC	80 KΩ	77V.DC	80KΩ
7	-6V.DC	2 MEG.	0V.	0Ω

Pin No.	12AT6 Volt.	12AT6 Res	50L6GT Volt	50L6GT Res
1	-4V.DC	3.5MEG	0V.	0Ω
2	0V.	0Ω	87V.AC	80Ω
3	0V.	0Ω	118V.DC	80KΩ
4	12V.AC	12Ω	77V.DC	80KΩ
5	-3V.DC	240 KΩ	0V.	500KΩ
6	0V.	0Ω	97V.DC	80KΩ
7	39V.DC	330 KΩ	3 7V.AC	34Ω
8			4.6V.DC	145Ω

Pin No.	35W4 Volt.	35W4 Res
1	0V.	0Ω
2	77V.DC	80 KΩ
3	87V.AC	80Ω
4	117V.AC	112Ω
5	113V.AC	120Ω
6	112V.AC	108Ω
7	120V.DC	80KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

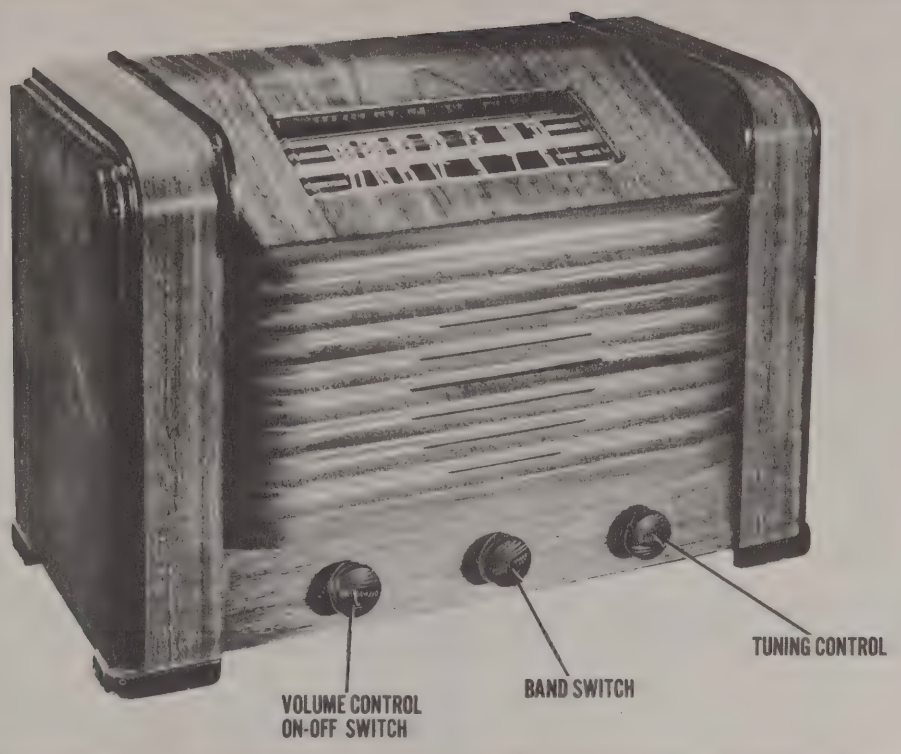
4712-5

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AUTOMATIC
MODELS 660, 662, 666



AUTOMATIC
MODELS 660, 662, 666

AUTOMATIC MODEL 662

TRADE NAME	Automatic, Model 660, 662, 666
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.
TYPE SET	AC-DC Operated 2 Band Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 14A7 RF Amp., 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 35L6GT Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC — RATING .260 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	538-1600KC — **SHORT WAVE** 5.9-22.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to chassis.	"	"	Tuning cap. fully closed	"	A5	Adjust for minimum output.
3	400Ω	"	19MC	SW	19MC	"	A6	Adjust for maximum output.
4	200MMFD	"	1600KC	BC	Tuning cap. fully open.	"	A7	" " " "
5	200MMFD	"	1400KC	"	Tune for maximum output.	"	A8	" " " "
6	200MMFD	"	600KC	"	Tune for maximum output.	"	A9	Rock tuning cap. and adjust for maximum output. Repeat Steps 4, 5 and 6 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

AUTOMATIC MODELS 660, 662, 663

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	14A7	14A7	8V	
2	Converter	14Q7	14Q7	8AL	
3	IF Amp.	14A7	14A7	8V	
4	Det.-AVC-AF	14B6	14B6	8W	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7	50	150		BR5015	TC49	M-50-150	UT-501	PRS150-50	Filter
8	30	150		BK3015	TC47	M-30-150	UT-301	PRS150-30	"
9	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
10	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Output Plate Bypass
11	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
12	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	" "
13	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	BC Osc. Shunt
14	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
15	.002	600		DT6D2	TP408	S-6-002	TC-22	684-002	Ext. Ant. Coupling
16	200	500		5W5T2	MC237	MO.5-32	1FM-32	1468-0002	Audio Plate Bypass
17	500	500		5W5T5	MC245	MO.5-35	1FM-35	1468-0005	Diode Filter
18	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor
19	200	500		5W5T2	MC237	MO.5-32	1FM-32	1468-0002	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	250KΩ	1	RV-46	MR44*	D13-130*	M-64-Z*	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 20A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

*Install a 22KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft side, terminals down.)

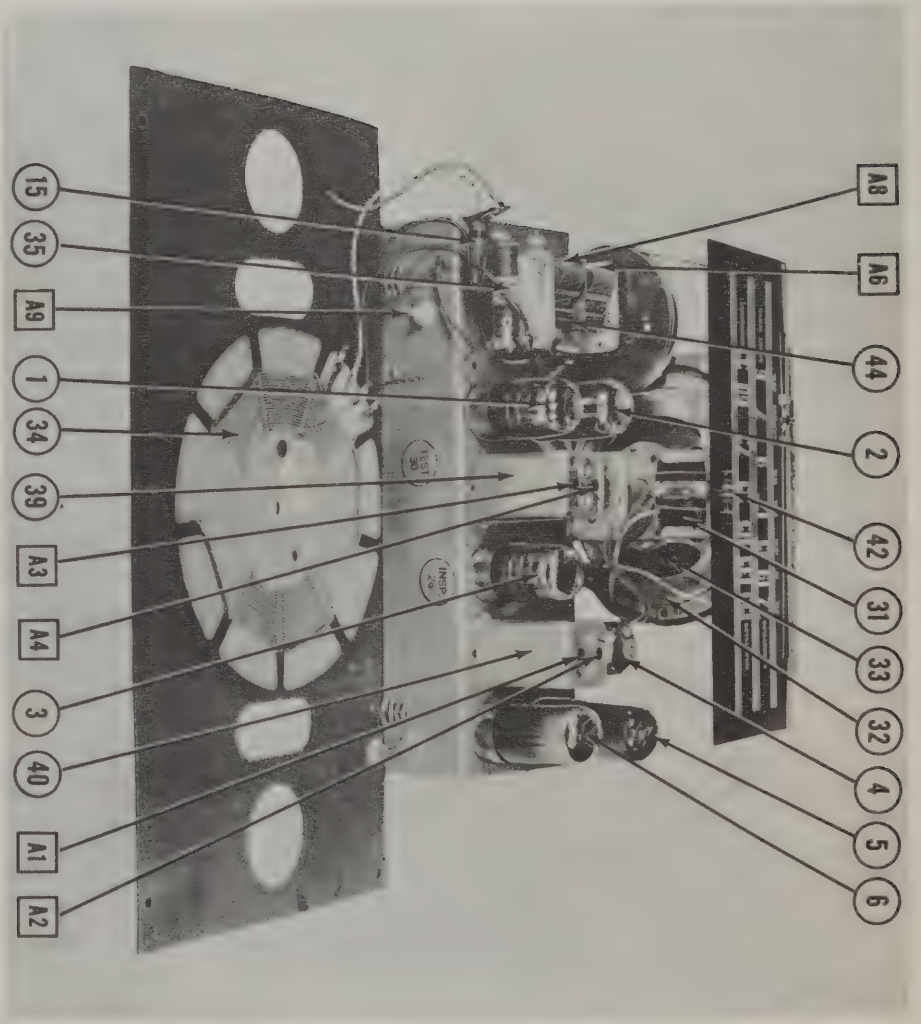
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	IDENTIFICATION CODES
21	4000Ω	½		BTS-3900	Yl.-Vi.-Red RF Plate Load
22	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Converter Grid
23	20KΩ	½		BTS-22K	Red-Blk.-Or. Oscillator Grid
24	50Ω	½		BW-½-47	Grn.-Blk.-Blk. Parasitic Suppressor
25	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
26	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
27	250KΩ	½		BTS-270K	Red-Grn.-Yl. AF Plate Load
28	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
29	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
30	1000Ω	2		BT-2-1000	Br.-Blk.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AUTOMATIC PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
31	2500Ω	3.7Ω	300Ω	1.0Ω		A-3876*	T22S45*		*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AUTOMATIC PART No.	JENSEN PART No.		
	FLD	VC IMP.		ST-105 Mod. P5-X		
		VC DIA.				
32		1/2"	CONE HAS SPECIAL ADJUSTMENT FEATURE-ORDER FROM MANUFACTURER			

R F COILS

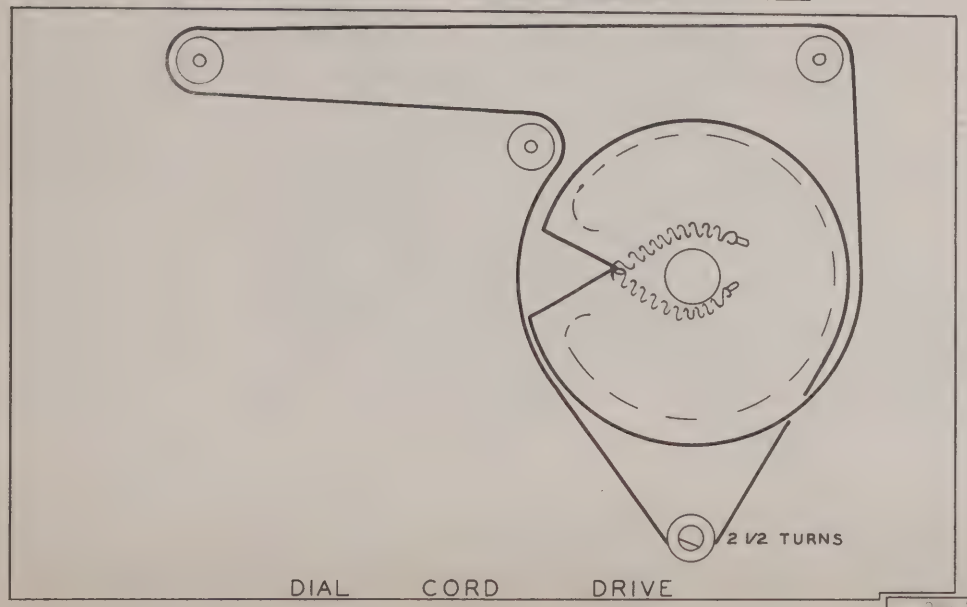
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AUTOMATIC PART No.	MEISSNER PART No.	
34	Loop Ant.	0Ω	1Ω			
35	SW Ant.Coil	0Ω	0Ω		14-1044	
36	Wave Trap		4.5Ω			
37	BC Osc.Coil	.1Ω	3Ω		14-1040	
38	SW Osc.Coil	0Ω	0Ω			
39	Input IF	15.5Ω	15.5Ω		16-6658	
40	Output IF	14Ω	14Ω		16-6660	
41	RF Choke		1.5Ω			

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AUTOMATIC PART No.		
42	Bayonet	6-8	0.15	Brown			Type 47

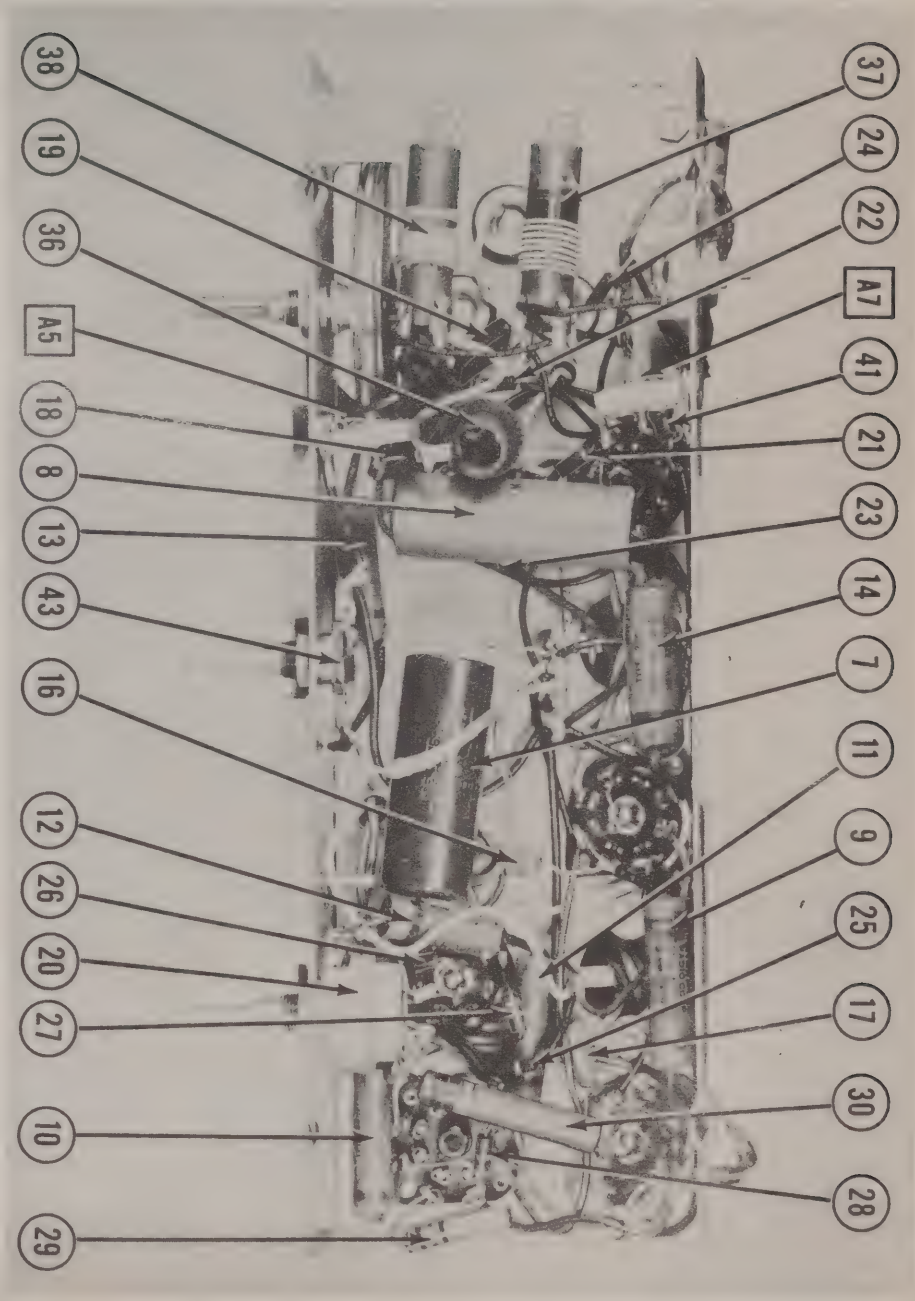
MISCELLANEOUS

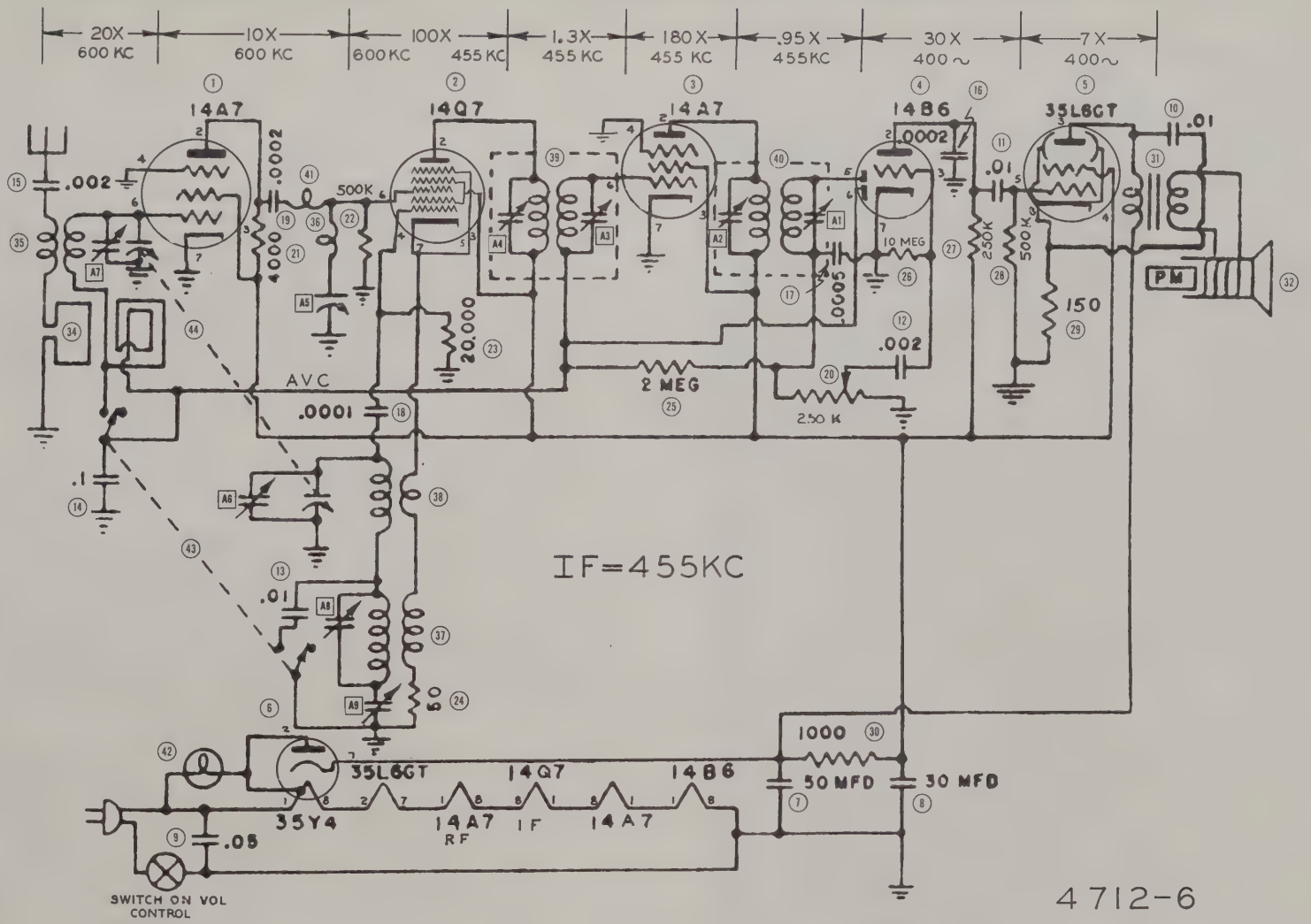
ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
43	Bandswitch		
44	2 Gang Var. Cap		18-373 MMF (each section)



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14A7	50V.AC	47V.DC	82V.DC	0V.	0V.	-.8V.DC	0V.	39V.AC
2	14Q7	26V.AC	82V.DC	82V.DC	-3V.DC	0V.	-1V.DC	.5V.DC	39V.AC
3	14A7	13V.AC	82V.DC	82V.DC	0V.	0V.	-.8V.DC	0V.	26V.AC
4	14B6	13V.AC	60V.DC	-.6V.DC	0V.	-.7V.DC	-.8V.DC	0V.	0V.
5	35L6GT	0V.	85V.AC	108V.DC	82V.DC	0V.	0V.	50V.AC	5.6V.DC
6	35Y4	117V.AC	112V.AC	0V.	112V.AC	0V.	0V.	118V.DC	85V.AC

RESISTANCE READINGS

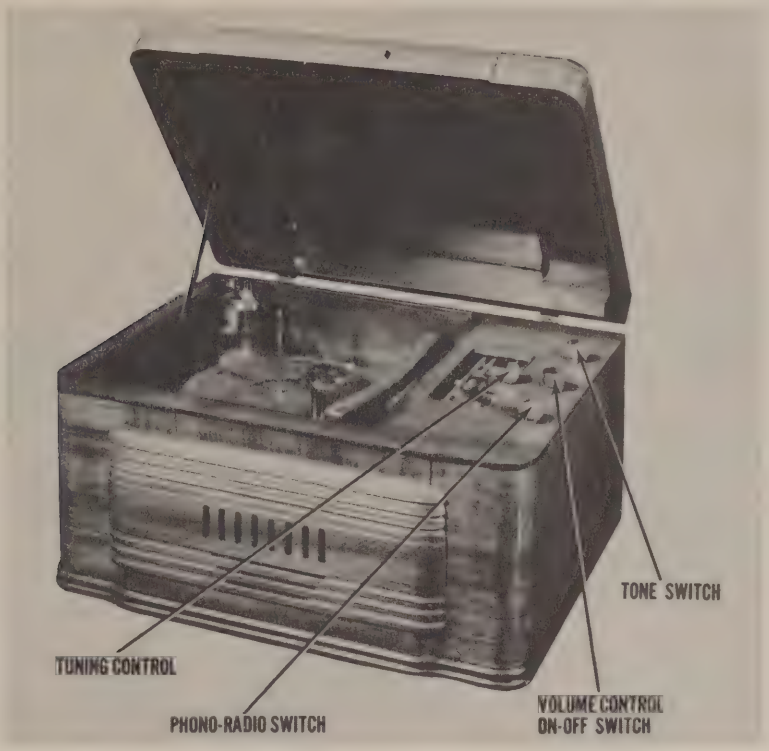
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14A7	49Ω	104 KΩ	100 KΩ	0Ω	0Ω	2.2 MEG.	0Ω	38Ω
2	14Q7	25Ω	100 KΩ	100 KΩ	20KΩ	0Ω	550KΩ	52Ω	38Ω
3	14A7	13Ω	100 KΩ	100 KΩ	0Ω	0Ω	2.2MEG.	0Ω	25Ω
4	14B6	13Ω	350KΩ	10 MEG.	0Ω	220Ω	2.2MEG.	0Ω	0Ω
5	35L6GT	0Ω	80Ω	100 KΩ	100 KΩ	510KΩ	0Ω	49Ω	160Ω
6	35Y4	110Ω	105Ω	0Ω	105Ω	INF.	0Ω	100 KΩ	80Ω

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



AUTOMATIC
MODEL 677

AUTOMATIC
MODEL 677

AUTOMATIC MODEL 677

TRADE NAME	Automatic, Model 677
MANUFACTURER	Automatic Radio Mfg. Co.,Inc., 122 Brookline Ave., Boston, Mass.
TYPE SET	AC Operated Phono - Radio Combination Superheterodyne With Loop Antenna
TUBES (SEVEN)	Types 14A7 RF Amp., 14Q7 Converter, 14A7 IF Amp., 14B6 Det.- AVC-AF, 50L6GT Power Output, (2) 35Y4 Rectifier
POWER SUPPLY	110 - 120 Volts AC RATING .420 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	538 - 1685 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning capacitor fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not, connect a .1 MFD. capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to pin 6 (grid) 14A7. Low side to chassis.	455KC	Tuning Cap. fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	"	High side to ext. ant. lead. Low side to chassis.	"	Tuning Cap. fully closed.	"	A5	Adjust for minimum output.
3	200MMF	"	1685KC	Tuning Cap. fully open	"	A6	Adjust for maximum output.
4	"	"	1400KC	Tune for max. output	"	A7	" " " "

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SET #22 DATE 8/47 FOLDER #4712-7

PARTS LIST AND DESCRIPTIONS

AUTOMATIC MODEL 677

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	14A7	14A7	8V	
2	Converter	14A7	14A7	8AL	
3	IF Amp.	14A7	14A7	8V	
4	Det.-AVC-AF	14B6	14B6	8W	
5	Power Output	50L6GT	50L6GT	7AC	
6	Rectifier	35Y4	35Y4	5AL	
7	"	"	"	"	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8	50	150		BR5015	TC49	M-50-150	UT-501	PRS150-50	Filter
9	50	150		BR5015	TC49	M-50-150	UT-501	PRS150-50	"
10	30	150		BR3015	TC47	M-30-150	UT-301	PRS150-30	"
11	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
12	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Output Plate Bypass
13	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
14	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Tone Compensation
15	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	Audio Plate Decoup.
16	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Audio Coupling
17	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
18	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Ext. Grd. Isolation
19	200	500		5W5T2	MC237	MO.5-32	1FM-32	1468-0002	Audio Plate Bypass
20	500	500		5W5T5	MC245	MO.5-35	1FM-35	1468-0005	Diode Filter
21	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid. Capacitor
22	200	500		5W5T2	MC237	MO.5-32	1FM-32	1468-0002	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	250KΩ	1	RV-46	MR44 *	D13-130 *	M-64-Z*	Volume control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 23A Per Instructions
C	Switch		" "	M26	41	SW-A	" " " " "

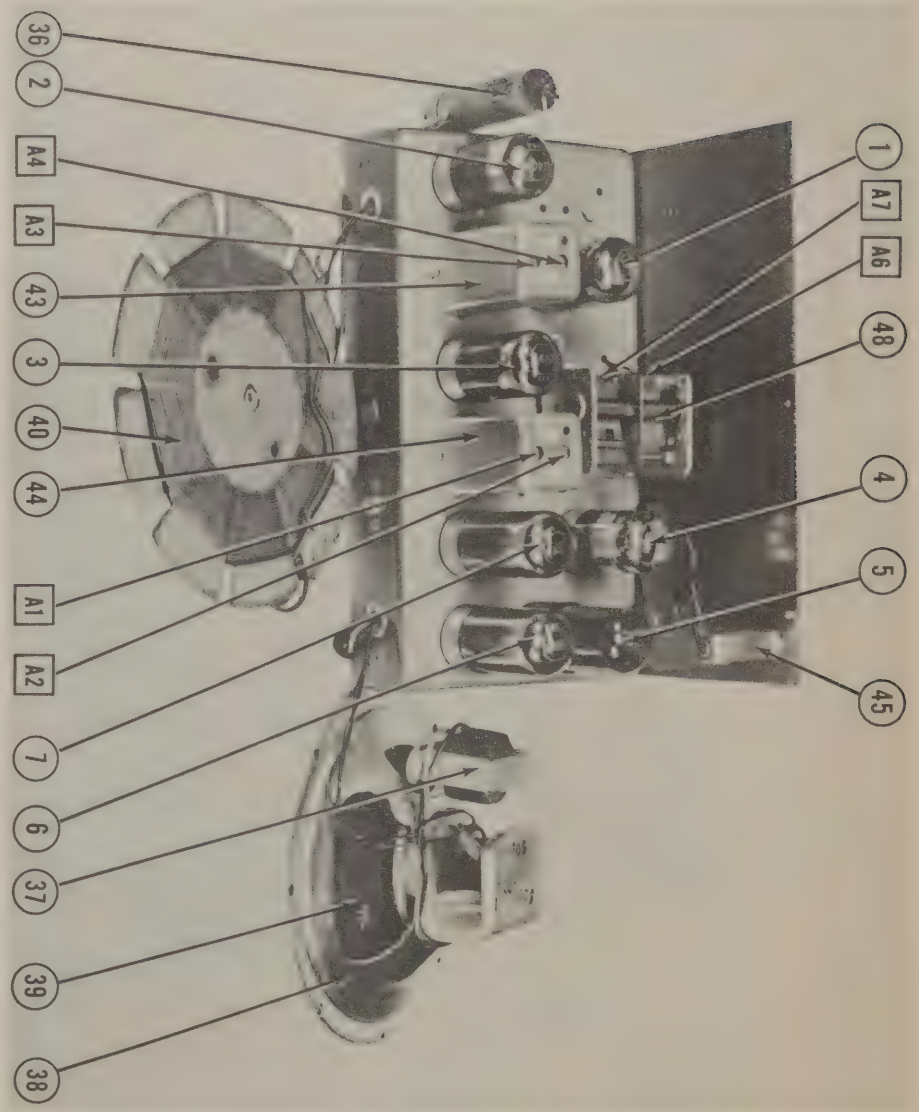
* If original control has 22KΩ fixed stop, install a 22KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft side, terminals down.)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	IDENTIFICATION CODES	
24	4000Ω	½		BTS-3900	Yl. - Blk. - Red	RF Plate Load
25	500KΩ	½		BTS-470K	Grn. - Blk. - Yl.	Converter Grid
26	20KΩ	½		BTS-22K	Red - Blk. - Or.	Oscillator Grid
27	2 Meg	½		BTS-2.2Meg	Red - Blk. - Grn.	AVC Network
28	250KΩ	½		BTS-270K	Red - Grn. - Yl.	Series Phono
29	3 Meg	½		BTS-3.3Meg	Or. - Blk. - Grn.	AF Grid
30	250KΩ	½		BTS-270K	Red - Grn. - Yl.	AF Plate Load
31	250KΩ	½		BTS-270K	Red - Grn.- Yl.	AF Plate Decoupling
32	500KΩ	½		BTS-470K	Grn. - Blk. - Yl.	Output Grid
33	150Ω	1		BW-1-150	Br. - Grn. - Br.	Output Cathode
34	1000Ω	2		BT-2-1000	Br. - Blk. - Red	Filter
35	350Ω	5		AB-350		Rectifier Ballast
36	470Ω	25		DHA-500		Series Filament - See Note

NOTE: On IRC Replacement Set slider at 470Ω from one end.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AUTOMATIC	STANCOR	THORDAR'N		
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.		
37	2300Ω	3.6Ω	220Ω	1.0Ω		A-3870	T22345		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AUTOMATIC PART No.	JENSEN PART No.		
38	FIELD	V.C. IMP.		ST-10P		
	PM	3.5Ω		Mod.P6-X		
39	CONE DIA.	V.C. DIA.				
	6 1/4"	1/2"	CONE HAS SPECIAL ADJUSTMENT FEATURE - ORDER FROM MANUFACTURER			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AUTOMATIC PART No.	MEISSNER PART No.	
40	Loop Ant.	0Ω	1Ω			
41	Osc. Coil		6Ω		14-1040	
42	Wave Trap		40Ω			
43	Input IF	20Ω	20Ω		16-6658	
44	Output IF	20Ω	20Ω		16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AUTOMATIC PART No.		
45	Bayonet	6-8	0.150	Brown			Type 47

MISCELLANEOUS

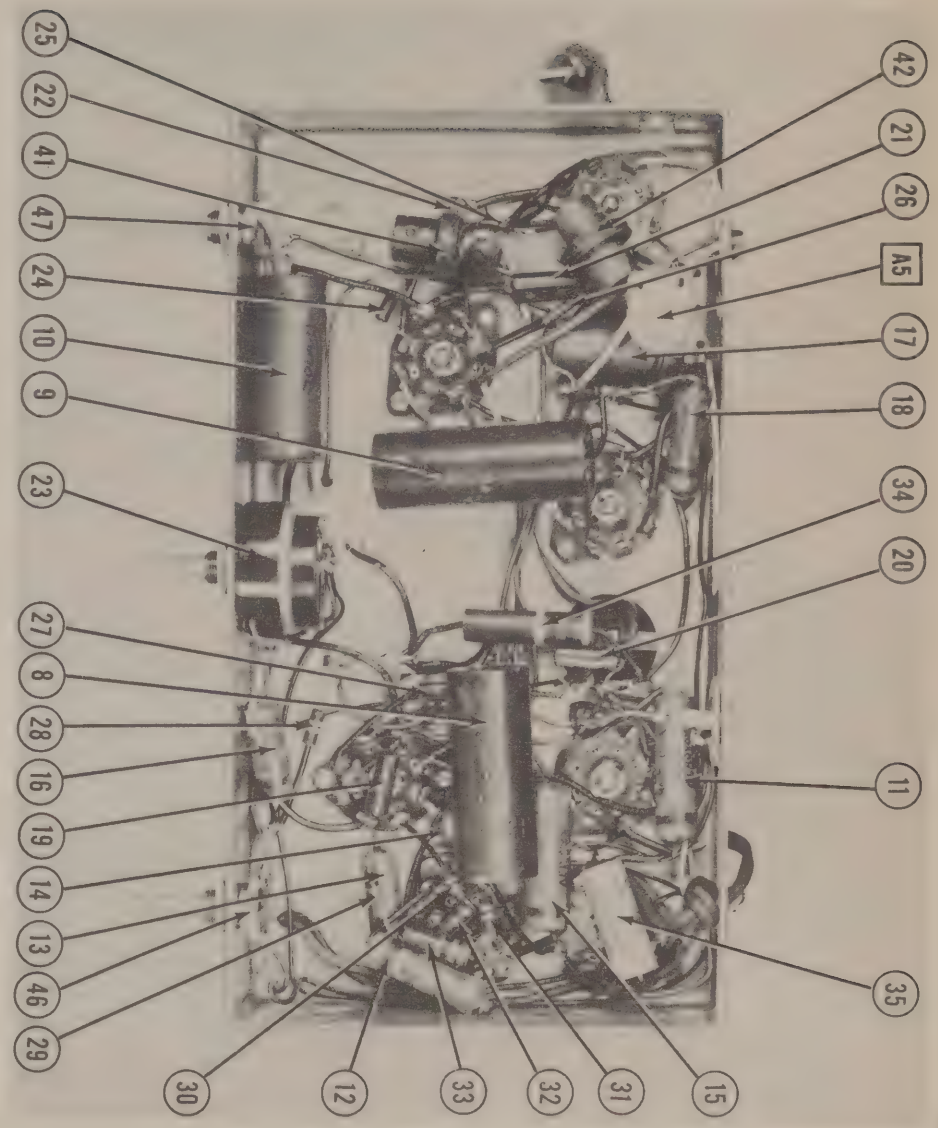
ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
46	Switch		Radio - Phono
47	Switch		Tone
48	2 Gang Var. Cap.		[illegible] MMF, [illegible] MMF
	Crystal Cartridge		ASTATIC Type L-70

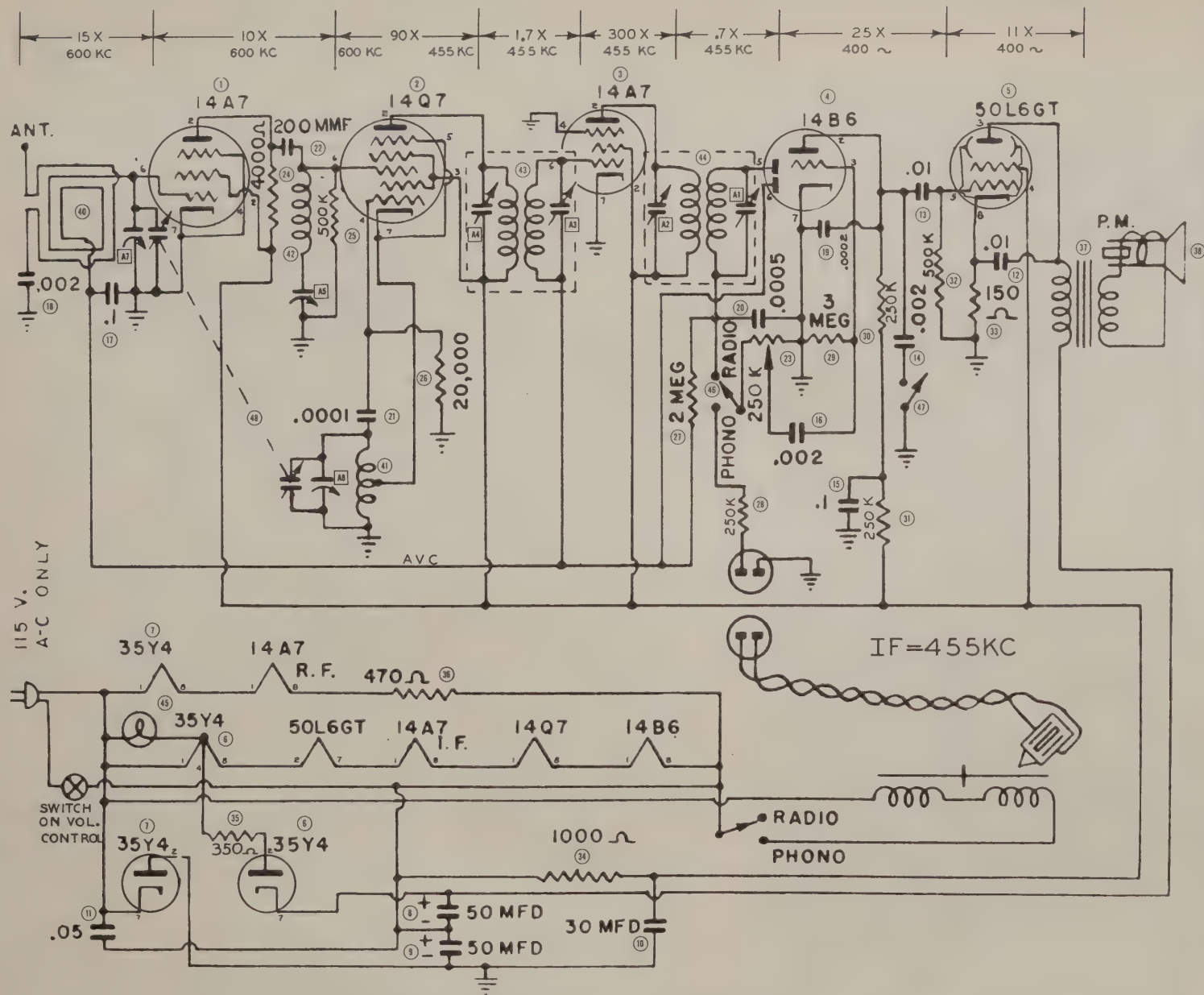
DISASSEMBLY INSTRUCTIONS

1. Remove four push on type control knobs.
2. Remove six Phillips head screws holding cover board on bottom of chassis. Remove cover board.
3. Remove phono motor plug.
4. Remove phono pickup plug from chassis.
5. Remove one Phillips head screw holding chassis in cabinet. Remove chassis from cabinet.
6. Remove one hex nut holding loop antenna in cabinet. Remove loop from cabinet.
7. Remove two wood screws holding speaker in cabinet. Remove speaker from cabinet.

AUTOMATIC MODEL 677

CHASSIS—BOTTOM VIEW





NOTE: FILAMENT READINGS, PLATE OF TUBE #6, & CATHODE OF TUBE #7 TAKEN FROM SWITCH ON VOL CONTROL

Pin No.	14A7 Volt	14A7 Res	14Q7 Volt	14Q7 Res
1	83V. AC	118 Ω	26V. AC	31 Ω
2	80V. DC	54 K Ω	88V. DC	50 K Ω
3	88V. DC	50 K Ω	88V. DC	50K Ω
4	0V.	0 Ω	-8V. DC	18K Ω
5	0V.	0 Ω	0V.	0 Ω
6	-5V. DC	2.3MEG.	0V.	600 K Ω
7	0V.	0 Ω	0V.	0 Ω
8	81V. AC	125 Ω	13V. AC	13 Ω

Pin No	14A7 Volt	14A7 Res	14B6 Volt	14B6 Res
1	39V. AC	42 Ω	13V. AC	13 Ω
2	88V. DC	50 K Ω	47V. DC	550 Ω
3	88V. DC	50K Ω	-7V. DC	2.9MEG.
4	0V.	0 Ω	0V.	0 Ω
5	0V.	0 Ω	-5V. DC	2.3MEG.
6	-5V. DC	2.3MEG.	-6V. DC	260K Ω
7	0V.	2.3MEG.	0V.	0 Ω
8	26V. AC	31 Ω	0V.	0 Ω

Pin No	50L6 GT Volt	50L6 GT Res	35Y4 Volt	35Y4 Res
1	0V.	0 Ω	117V. AC	100 Ω
2	88 V. AC	80 Ω	92V. AC	430 Ω
3	195 V. AC	100 KΩ	0V.	0 Ω
4	88V. DC	50 K Ω	113V. AC	95 Ω
5	0V.	560 K Ω	0V.	INF.
6	67V. DC	300 K Ω	0V.	0 Ω
7	39V. AC	42 Ω	205 VDC	100K Ω
8	5.8V. DC	130 Ω	88V. AC	80 Ω

Pin No	35Y4 Volt	35Y4 Res
1	117V. AC	100 Ω
2	0V.	0 Ω
3	0V.	0 Ω
4	110V. AC	103 Ω
5	0V.	INF.
6	0V.	INF.
7	117V. AC	100 Ω
8	83V. AC	118 Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

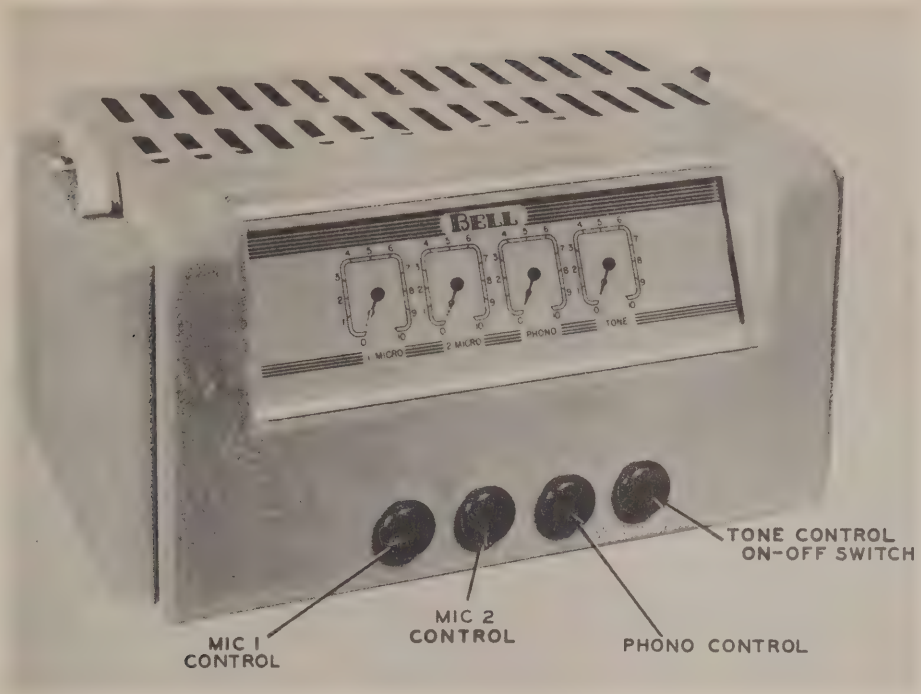
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4712-7

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

BELL SOUND
MODEL 3715



BELL SOUND MODEL 3715

TRADE NAME	Bell Sound, Model 3715
MANUFACTURER	Bell Sound Systems, Inc., 1183 Essex Ave., Columbus 3, Ohio
TYPE SET	AC Operated 3 Channel 7 Tube Amplifier
TUBES (SEVEN)	Types (2) 7B7 Mic. Amp., 6SL7GT AF Amp., 6N7 Phase Inverter, (2) 6V6GT Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .9 Amp. @ 117 Volts AC

NOTE: CONTROLS SET AT MAXIMUM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	3.3V.AC	138V.DC	19V. DC	0V.	0V.	-4V.DC	0V.	3.3V.AC
2	7B7	3.3V.AC	138V.DC	19V.DC	0V.	0V.	-4V.DC	0V.	3.3V.AC
3	6SL7GT	0V.	0V.	0V.	0V.	102V.DC	1.2V.DC	3.3V.AC	3.3V.AC
4	6N7	0V.	3.3V.AC	165V.DC	0V.	0V.	165V.DC	3.3V.AC	3.6V.DC
5	6V6GT	0V.	3.3V.AC	315V.DC	310V.DC	0V.	0V.	3.3V.AC	19V. DC
6	6V6GT	0V.	3.3V.AC	315V.DC	310V.DC	0V.	0V.	3.3V.AC	19V.DC
7	5U4G	0V.	330V.DC	INF.	360VAC	INF.	360V.AC	INF.	330V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	.1Ω	170 KΩ	1.6 MEG.	0Ω	INF.	10 MEG.	0Ω	.1Ω
2	7B7	.1Ω	170KΩ	1.6MEG.	0Ω	INF.	10 MEG.	0Ω	.1Ω
3	6SL7GT	0Ω	0Ω	0Ω	320KΩ	340KΩ	2.7KΩ	.1Ω	.1Ω
4	6N7	0Ω	.1Ω	122 KΩ	460KΩ	120KΩ	122 KΩ	.1Ω	1KΩ
5	6V6GT	0Ω	.1Ω	22KΩ	22KΩ	240KΩ	INF.	.1Ω	190Ω
6	6V6GT	0Ω	.1Ω	22KΩ	22KΩ	240KΩ	INF.	.1Ω	190Ω
7	5U4G	0Ω	22 KΩ	INF.	360Ω	INF.	357Ω	INF.	22KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

BELL SOUND MODEL 371

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. 1 Amp.	7B7	7B7	8V	
2	Mic. 2 Amp.	7B7	7B7	8V	
3	AF Amp.	6SL7GT	6SL7GT	8BD	
4	Phase Inv.	6N7	6N7	8B	
5	Power Output	6V6GT	6V6GT	7AC	
6	Power Output	6V6GT	6V6GT	7AC	
7	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELL SOUND PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8	10	450		UP1045	FP142	DY-10-450	EL-1	AF2J	Filter
9	30	450		UP3045	FP145	DY-30-450	EL-3	AF6J	"
10A	10	450		UP1145	FP231	DY-2x10-450	EL-210	AF22J	■ Filter
B	10	450							▲ "
11	10	25		BR102A	TC22	M-10-25	TA-10	PRS25-10	Cath. Bypass
12	10	25		BR102A	TC22	M-10-25	TA-10	PRS25-10	" "
13	50	25		BR502	TC26	M-50-25	TA-50	PRS25-50	" "
14	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Audio Coupling
15	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	" "
16	.03	600		DT6S3	TP413	S-6-03	TC-13	684-03	Tone Compensation
17	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	Audio Coupling
18	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	" "
19	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	" "
20	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Mic. Amp. Screen Bypass
21	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	" " " "
22	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Mic. Coupling
23	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	" "

CONTROLS

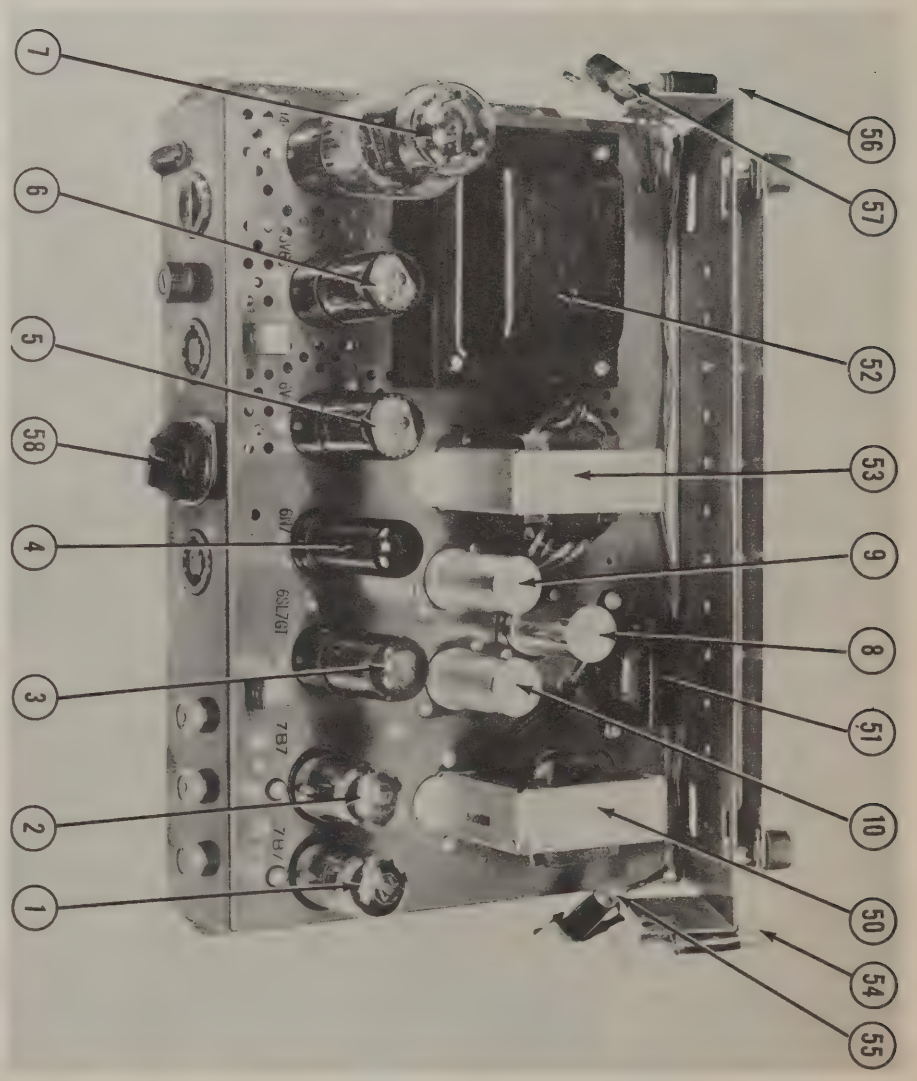
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELL SOUND PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
24A	1 Meg.	1	B-20066-P-39	MR53	D13-137	M-63-Z	Mike 1 Control - See Note
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 24A per instructions
25A	1 Meg.	1	B-20066-P-39	MR53	D13-137	M-63-Z	Mike 2 Control - See Note
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 25A per instructions
26A	500KΩ	1	B-20066-P-31	MR48	D13-133	M-60-Z	Phono Control-See Note
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 26A per instructions
27A	500KΩ	1	B-20066-P-49	MR48	D13-133	M-60-Z	Tone Control - See Note
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 27A per instructions
C	Switch		" "	M26	41	SW-A	" " " "

Note-Use original pulley on shaft to actuate volume indicator.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELL SOUND PART No.	IRC PART No.	IDENTIFICATION CODES
28	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st Mic. Amp. Grid
29	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 2nd Mic. Amp. Grid
30	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. 1st Mic. Amp. Screen Dropping
31	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. 2nd Mic. Amp. Screen Dropping
32	100KΩ	½		BTS-100KΩ	Br.-Blk.-Yl. 1st Mic. Amp. Plate Load
33	100KΩ	½		BTS-100KΩ	Br.-Blk.-Yl. 2nd Mic. Amp. Plate Load
34	270KΩ	½		BTS-270K	Red-Vl.-Yl. Isolation
35	270KΩ	½		BTS-270K	Red-Vl.-Yl. Isolation
36	270KΩ	½		BTS-270K	Red-Vl.-Yl. Isolation
37	2700Ω	½		BTS-2700	Red-Vl.-Red AF Cathode
38	270KΩ	½		BTS-270K	Red-Vl.-Yl. AF Plate Load
39	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. Driver Grid
40	100KΩ	1		BTA-100K	Br.-Blk.-Yl. Driver Plate Load
41	100KΩ	1		BTA-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
42	120KΩ	½		BTS-120K	Br.-Red-Yl. Phase Inverter Grid
43	1000Ω	½		BTS-1000	Br.-Blk.-Red Phase Inverter Cathode
44	120KΩ	½		BTS-120K	Br.-Red-Yl. Output Grid
45	120KΩ	½		BTS-120K	Br.-Red-Yl. Output Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

46	200Ω	10		AB-200		Output Cathode
47	25KΩ	10		AB-25K		Bleeder
48	250Ω	10		AB-250		Surge Limiter
49	47KΩ	2		BT-2-47K	Yl.-Vi.-Or.	Filter

FILTER CHOKE (SWINGING)

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: BELL SOUND PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
50	.112A	90Ω	5 Henries	B-20055	C-2309*		*Drill one new mounting hole.

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA: BELL SOUND PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
51	.007A	500Ω	9 Henries	B-20058	C-1707	T20C52	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	
52	117V AC @ .9A	720V CT @ .112A	5.0V AC @ 2.0A	6.6V AC @ 3.3A	B-20059	P-6314	T22R07	

TRANSFORMER (OUTPUT)

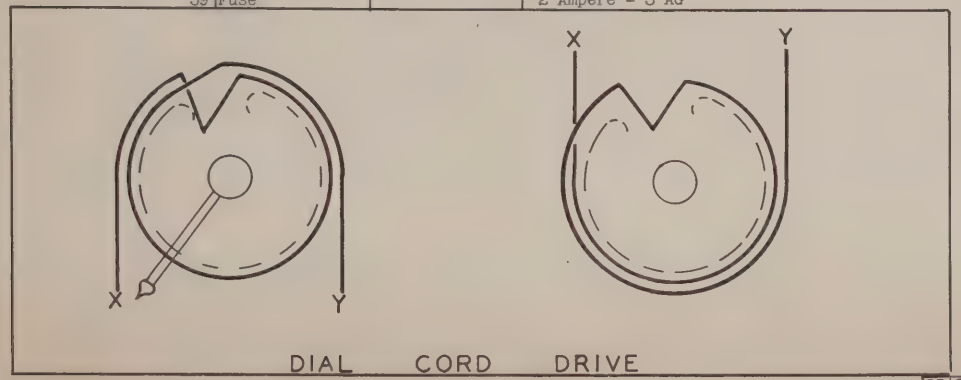
ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
53	8000Ω CT	2.5Ω 4Ω 8Ω 16Ω 250Ω 500Ω	210Ω CT	.4Ω .5Ω .6Ω .8Ω 10.4Ω 16Ω	B-20056		T22S66#		#Drill new mounting holes.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BELL SOUND PART No.		INSTALLATION NOTES
54	Bayonet	6-8	.25A	Blue			Type 44
55	"	"	"	"			" "
56	"	"	"	"			" "
57	"	"	"	"			" "

MISCELLANEOUS

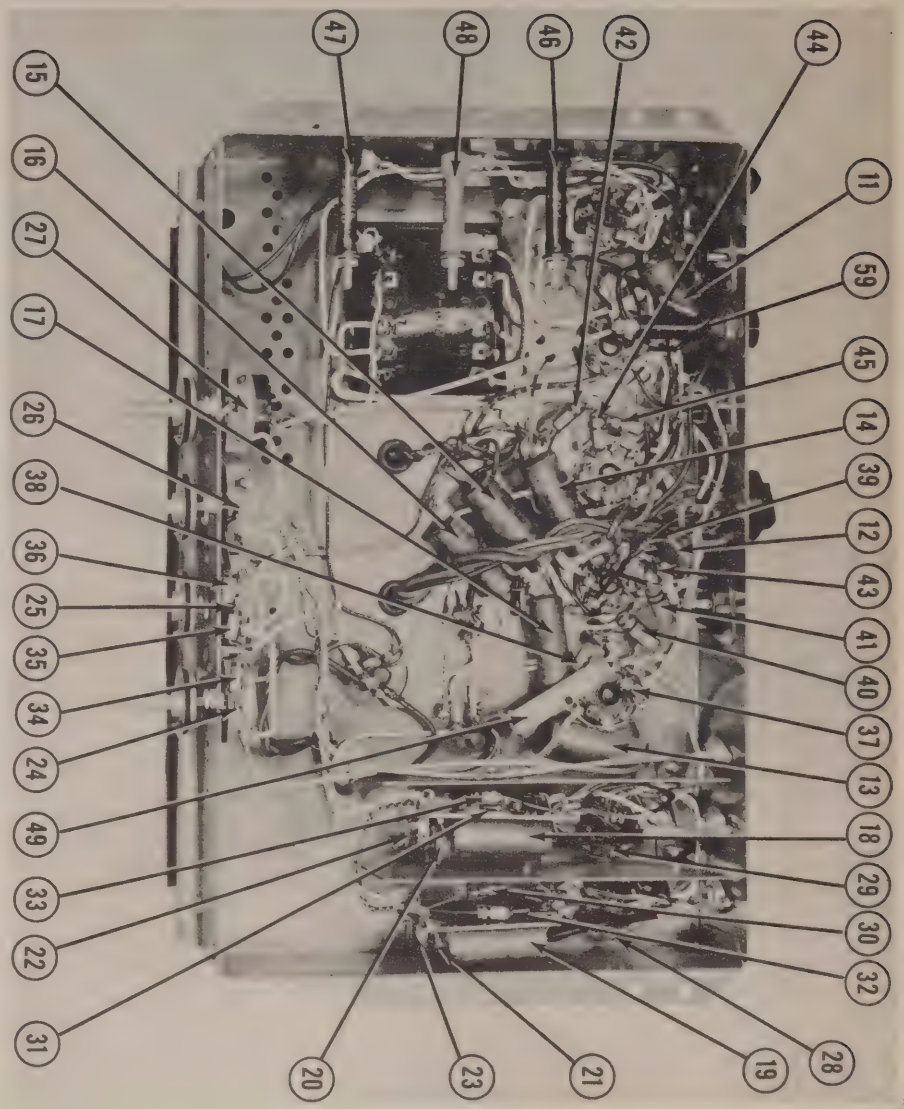
ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
58	Switch		Impedance Selector
59	Fuse		2 Ampere - 3 AG



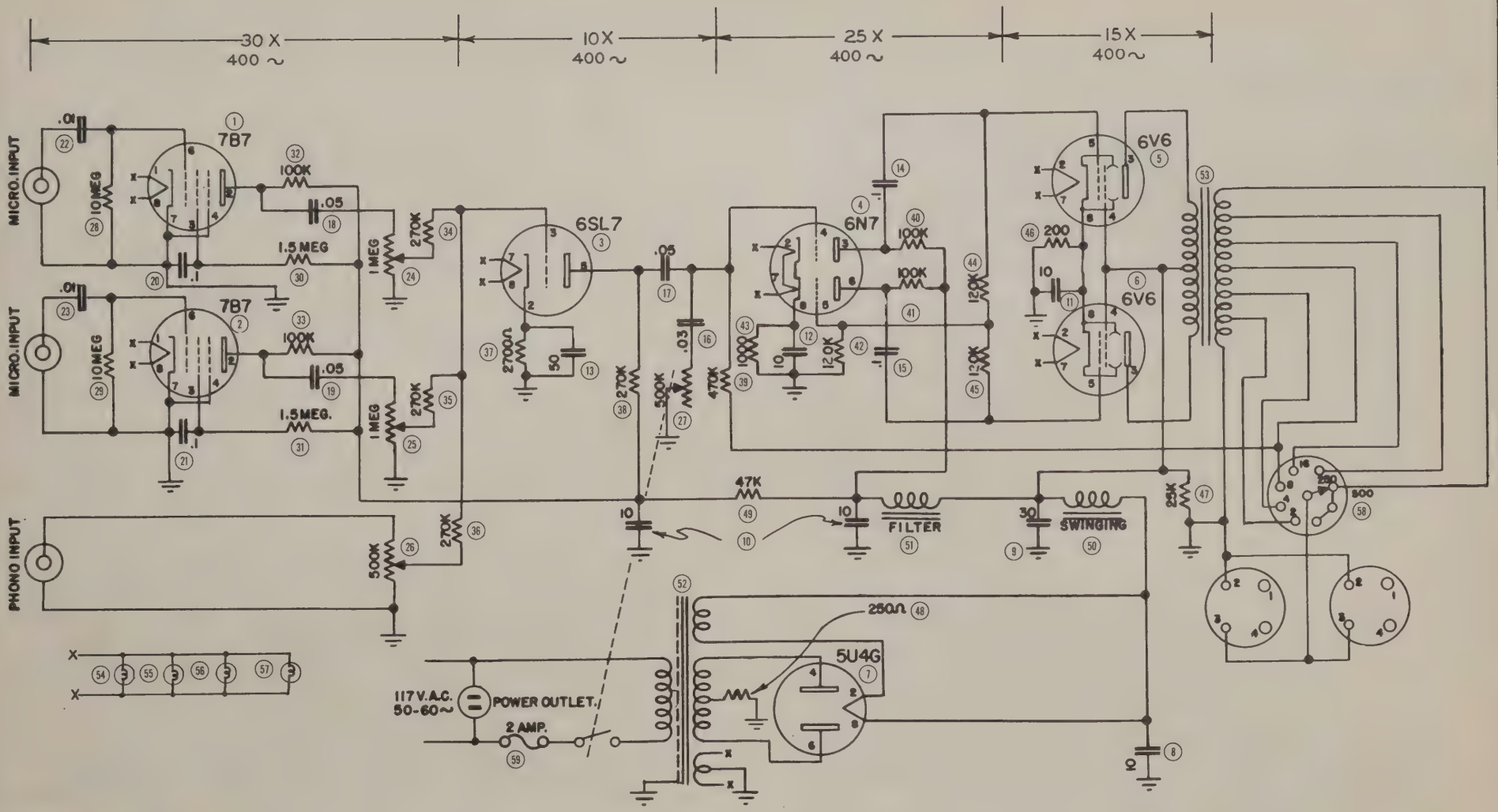
DIAL CORD DRIVE

BELL SOUND MODEL 371S

CHASSIS—BOTTOM VIEW



BELL SOUND MODEL 371S



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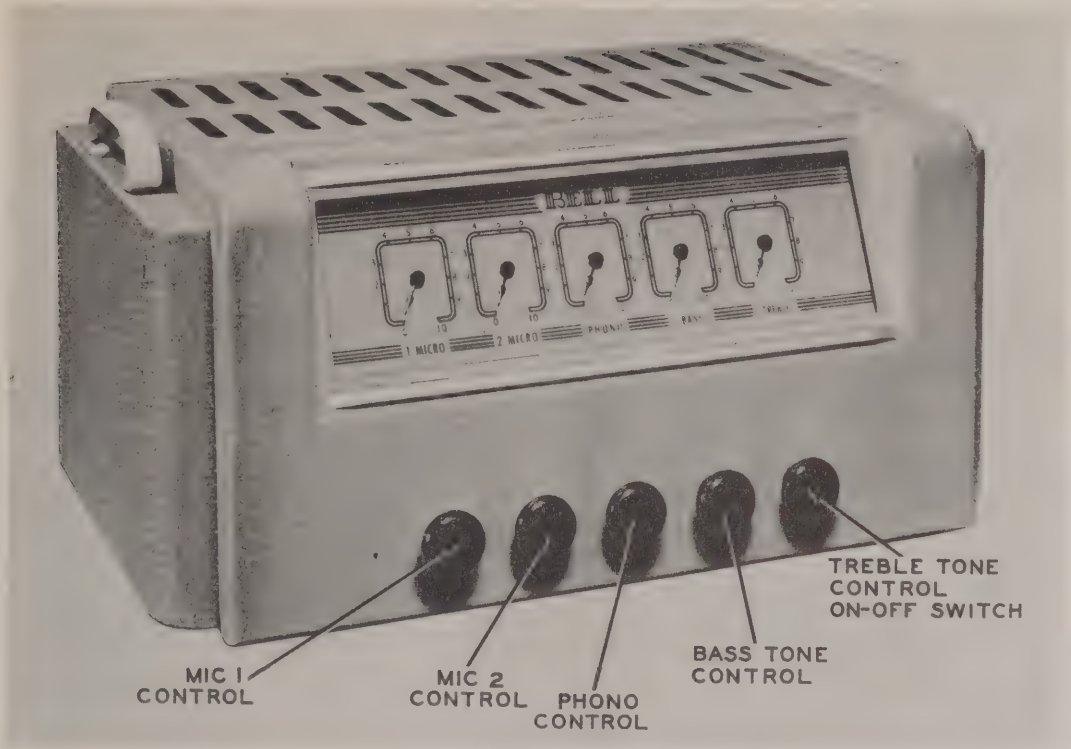
4712-8

BELL SOUND
MODEL 3725



BELL SOUND
MODEL 3725

BELL SOUND MODEL 3725

TRADE NAME	Bell Sound, Model 3725
MANUFACTURER	Bell Sound Systems, Inc., 1183 Essex Ave., Columbus 3, Ohio
TYPE SET	AC Operated 3 Channel 7 Tube Amplifier
TUBES (SEVEN)	Types (2) 7B7 Mic. Amp., 6SL7GT or 6SF5 1st AF Amp., 6N7 2nd AF Amp.-Phase Inv., (2) 6L6G Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 1.3 Amp. @ 117 Volts AC

ALL CONTROLS SET AT MAXIMUM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	3.3V.AC	142V.DC	38V. DC	0V.	0V.	-7 V.DC	0V.	3.3V.AC
2	7B7	3.3V.AC	138V.DC	36V.DC	0V.	0V.	-.7V.DC	0V.	3.3V.AC
3	6SL7 GT	0V.	0V.	0V.	0V.	112V.DC	1.5V.DC	3.3V. AC	3.3V. AC
4	6N7	0V.	3.3V.AC	235V.DC	0V.	0V.	235V.DC	3.3V. AC	5 V. DC
5	6L6G	0V.	3.3V.AC	390V.DC	290V.DC	0V.	390V. DC	3.3V. AC	21V. DC
6	6L6G	0V.	3.3V.AC	390V.DC	290V.DC	0V.	390 V. DC	3.3V.AC	21V. DC
7	5U4G	0V.	410V.DC	INF.	400V.AC	INF.	400V.AC	INF.	410V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	.1Ω	160 KΩ	1.6MEG.	0Ω	INF.	10 MEG.	0Ω	.1Ω
2	7B7	.1Ω	160 KΩ	1.6MEG.	0Ω	INF.	10 MEG.	0Ω	.1Ω
3	6SL7GT	0Ω	0Ω	0Ω	360 KΩ	330 KΩ	2.7 KΩ	.1Ω	.1Ω
4	6N7	0Ω	.1Ω	110 KΩ	550KΩ	26 KΩ	110 KΩ	.1Ω	1KΩ
5	6L6 GT	0Ω	.1Ω	9.5 KΩ	7.5KΩ	75KΩ	9.5 KΩ	.1Ω	190Ω
6	6L6GT	0Ω	.1Ω	9.5 KΩ	7.5 KΩ	75KΩ	9.5KΩ	.1Ω	190Ω
7	5U4G	0Ω	9.5 KΩ	INF.	63Ω	INF	58Ω	INF.	9.5KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

BELL SOUND MODEL 3725

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. Amp.		7B7	8V	
2	Mic. Amp.		7B7	8V	
3A	1st AF		6SL7GT	8BD	
B	1st AF		6SF5	6AB	
4	2nd AF Phase-Inv.		6N7	8B	
5	Power Output		6L6G	7AC	
6	" "		6L6G	7AC	
7	Rectifier		5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELL SOUND PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8	20	450		BR2045	TC75	M-20-450	UT-20	PRS450-20	Filter
9	20	450		BR2045	TC75	M-20-450	UT-20	PRS450-20	"
10A	10	450		UP1145	FP231	DY-2x10-450	EL-210	AF22J	■ "
B	10	450							▲ "
11	30	450		UP3045	FP145	DY-30-450	EL-3	AF6J	"
12	10	450		UP1045	FP142	DY-10-450	EL-1	AF2J	"
13	50	25		BR502	TC29	M-50-25	TA-50	PRS25-50	Cath. Bypass
14	50	25		BR502	TC29	M-50-25	TA-50.	PRS25-50	" "
15	50	25		BR502	TC29	M-50-25	TA-50	PRS25-50	" "
16	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Audio Coupling
17	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	" "
18	.003	600		DT6D3	TP406	S-6-003	TC-23	684-003	Tone Compensation
19	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	" "
20	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	Audio Coupling
21	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	" "
22	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	" "
23	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Mic. Amp. Screen Bypass
24	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	" " " "
25	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Mic. Coupling
26	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	" "
27	500	500		5W5T5	MC240	MO.5-35	1FM-35	1468-0005	Tone Compensation

CONTROLS

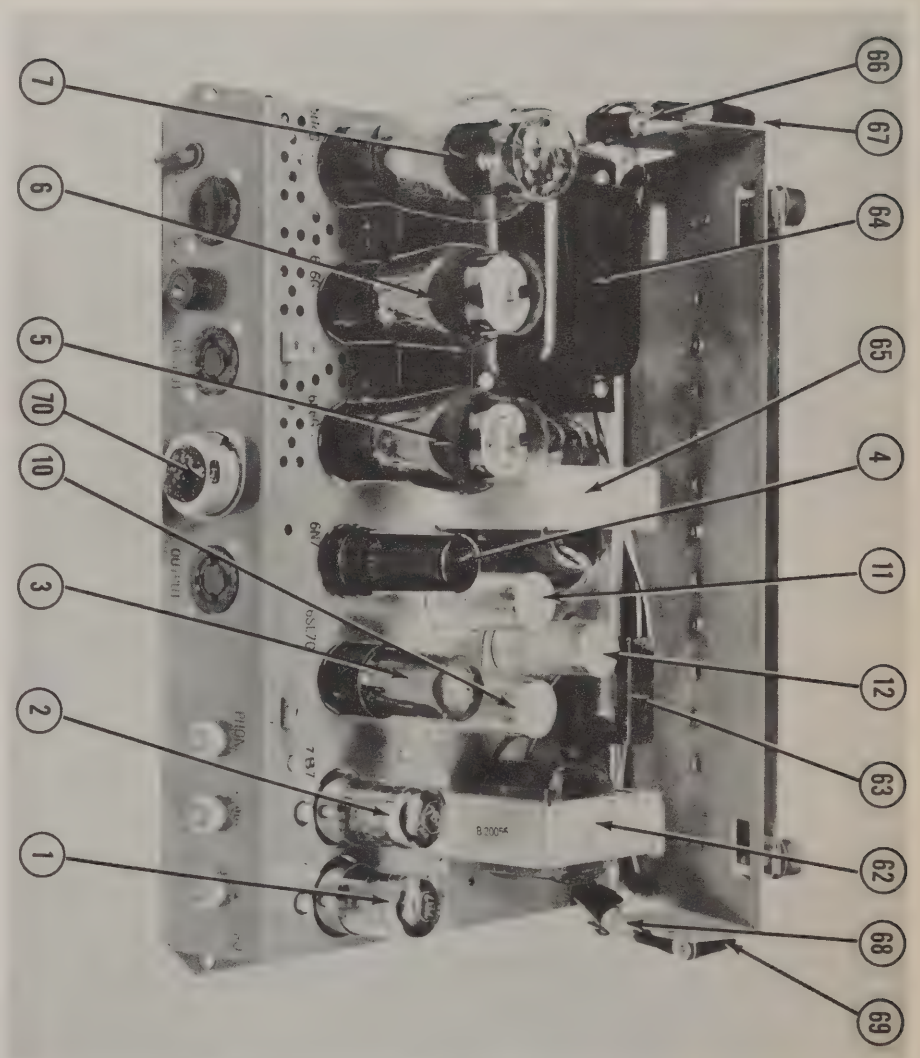
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELL SOUND PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
28A	1 Meg.	1		MR53	D13-137	M-63-Z	Mike 1 - Control - See Note
B	Shaft			Not Req.	A	Not Req.	Attach to 28A per instructions
29A	1 Meg.	1		MR53	D13-137	M-63-Z	Mike 2 - Control - See Note
B	Shaft			Not Req.	A	Not Req.	Attach to 29A per instructions
30A	500KΩ	1		MR48	D13-133	M-60-Z	Phono Control - See Note
B	Shaft			Not Req.	A	Not Req.	Attach to 30A per instructions
31A	500KΩ	1		MR48	D13-133	M-60-Z	Bass Control - See Note
B	Shaft			Not Req.	A	Not Req.	Attach to 31A per instructions
32A	500KΩ	1		MR48	D13-133	M-60-Z	Treble Control-See Note
B	Shaft			Not Req.	A	Not Req.	Attach to 32A per instructions
C	Switch			M26	41	SW-A	" " " " "

Note-Use original pulley on shaft to actuate volume indicator.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELL SOUND PART No.	IRC PART No.	IDENTIFICATION CODES
33	10 Meg.	±		BTS-10 Meg.	Br.-Blk.-Blue 1st Mic. Amp. Grid
34	10 Meg.	±		BTS-10 Meg.	Br.-Blk.-Blue 2nd Mic. Amp. Grid
35	1.5 Meg.	±		BTS-1.5 Meg.	Br.-Grn.-Grn. 1st Mic. Amp. Screen Dropping
36	1.5 Meg.	±		BTS-1.5 Meg.	Br.-Grn.-Grn. 2nd Mic. Amp. Screen Dropping
37	100KΩ	±		BTS-100K	Br.-Blk.-Yl. 1st Mic. Amp. Plate Load
38	100KΩ	±		BTS-100K	Br.-Blk.-Yl. 2nd Mic. Amp. Plate Load
39	270KΩ	±		BTS-270K	Red-Vi.-Yl. Isolation
40	270KΩ	±		BTS-270K	Red-Vi.-Yl. "
41	270KΩ	±		BTS-270K	Red-Vi.-Yl. "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	
42	2700Ω	½		BTS-2700	Red-Vi.-Red AF Cathode
43	270KΩ	½		BTS-270K	Red-Vi.-Yl. AF Plate Load
44	47KΩ	2		BTS-47K	Yl.-Vi.-Yl. Filter
45	270KΩ	½		BTS-270K	Red-Vi.-Yl. Tone Compensation
46	47KΩ	½		BTS-47K	Yl.-Vi.-Yl. Driver Grid
47	100KΩ	1		BTA-100K	Br.-Blk.-Yl. Driver Plate Load
48	100KΩ	1		BTA-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
49	1000Ω	½		BTS-1000	Br.-Blk.-Red Phase Inverter Cathode
50	27KΩ	½		BTS-27K	Red-Vi.-Or. Phase Inverter Grid
51	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Output Grid
52	47KΩ	½		BTS-47K	Yl.-Vi.-Or. "
53	200Ω	10		AB-200	Output Cathode
54	330KΩ	½		BTS-330K	Or.-Or.-Yl. Feedback
55	330KΩ	½		BTS-330K	Or.-Or.-Yl. "
56	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Parasitic Suppressor
57	47Ω	1		BW-1-47	Yl.-Vi.-Blk. " "
58	2500Ω	20		DG-2500	Filter
59	7500Ω	20		DG-7500	Bleeder
60	100KΩ	1		BTA-100K	Br.-Blk.-Yl. "
61	100KΩ	1		BTA-100K	Br.-Blk.-Yl. "

FILTER CHOKE (SWINGING)

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000∿)	BELL SOUND PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
62	.150A	90Ω	5 Henries	B-20055	C-2309*		*Drill one new mounting hole.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000∿)	BELL SOUND PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
63	.007A	500Ω	9 Henries	B-20058	C-1707	T20C52	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BELL SOUND PART No.	STANCOR PART No.	THORDARSON PART No.	
64	117V AC @ 1.3A	800V CT @ .155A	5.0V AC @ 3.0A	6.5V AC @ 4.2A	B-20057	P-6165	T22R07	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
65	8000Ω CT	2.5Ω 4Ω 8Ω 16Ω 250Ω 500Ω	210Ω CT	.4Ω .5Ω .6Ω .8Ω 10.4Ω 16Ω	B-20056		T22S66†		†Drill new mounting holes.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					BELL SOUND PART No.		
66	Bayonet	6-8	0.25	Blue			Type 44
67	"	"	"	"			"
68	"	"	"	"			"
69	"	"	"	"			"

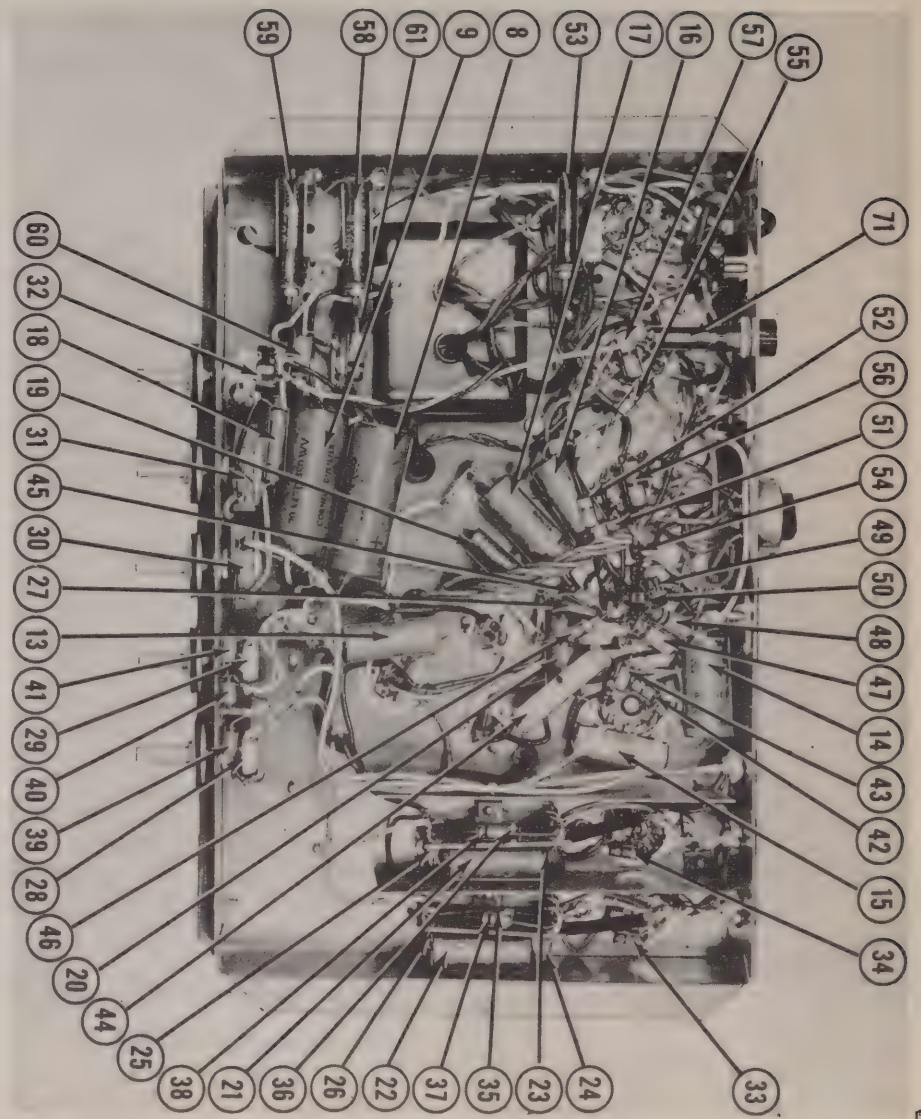
MISCELLANEOUS

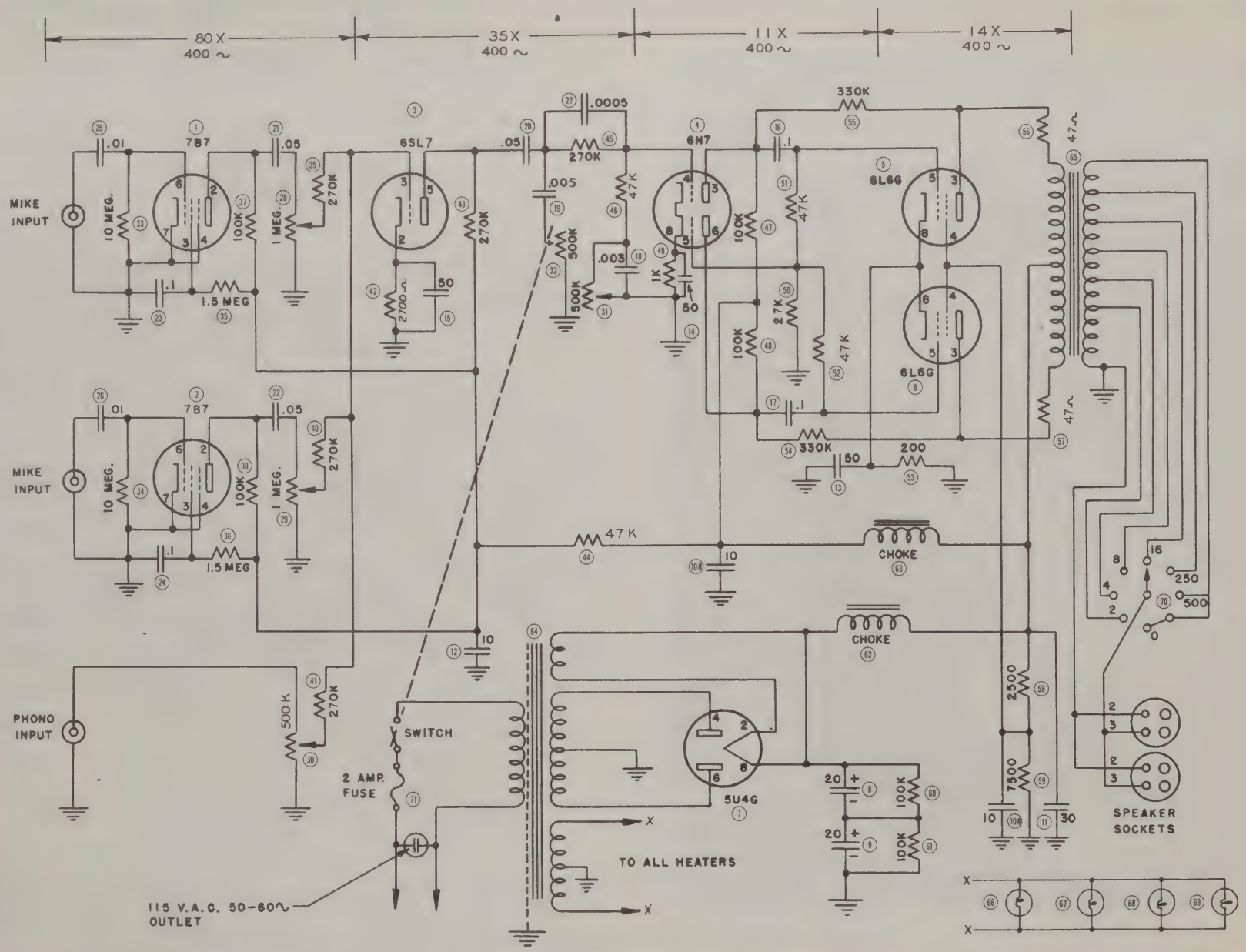
ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
70	Switch		Impedance Selector
71	Fuse		2 Ampere - 3AG

FOR DIAL CORD DRIVE DETAIL SEE BELL SOUND MODEL 3715.

BELL SOUND MODEL 3725

CHASSIS—BOTTOM VIEW





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BELMONT
MODEL 5D110

BELMONT
MODEL 5D110

BELMONT MODEL 5D110

TRADE NAME	Belmont, Model 5D110
MANUFACTURER	Belmont Radio Corp., 5921 Dickson Ave., Chicago, Ill.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne
TUBES (FIVE)	Types, 12BE6 Converter, 12BD6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	535-1720KC RATING .235 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer transformer if available. If not connect a .1 MFD. capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 7 (grid) 12BE6. Low side to B-.	455KC	Tuning slugs out completely	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	1720KC	"	"	A5	Adjust for maximum output.
3	200MMFD	High side to ext. ant. lead. Low side to B-.	1720KC	"	"	A6	" " " "
4	200MMFD	"	1400KC	Tune for maximum output.	"	Ant.Coil (40)	Adjust position of coil for maximum output. Repeat Steps 3 and 4 until no further improvement can be made.
5	200MMFD	"	1500KC	"			Set pointer at 1500KC.

DISASSEMBLY INSTRUCTIONS

1. Remove three push on type control knobs.
2. Remove phono motor plug from chassis.
3. Remove phono pick-up plug from chassis.
4. Remove speaker plug from chassis.
5. Remove leads from antenna plate.
6. Remove two hex screws holding chassis in cabinet. Slide chassis out rear of cabinet.
7. Remove two wood screws holding antenna plate in cabinet. Remove plate.
8. Remove two hex nuts holding speaker in cabinet. Remove speaker from cabinet.

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PARTS LIST AND DESCRIPTIONS

BELMONT MODEL 5D110

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BD6	12BD6	7CC	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	A-8C10077	UP6CJ44	FP357	DY-3x40-150	EL-224	AF844D	■ Filter
B	20	150							▲ "
C	20	150							"
7	.1	400	C-8D-10760	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Filter
8	.09	400	C-8D-11251	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
9	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
10	.006	600	C-8D-10785	DT6D6	TP409	S-6-006	TC-26	684-006	Audio Coupling
11	.002	600	C-8D-10789	DT6D5	TP405	S-6-002	TC-22	684-002	" "
12	.2	400	C-8D-10942	DT4P2	TP429	S-4-2	TC-2	484-.2	RF Bypass Pwr. Supp.
13	.05	200	C-8D-10770	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	270	500	C-8F3-118	5W5T3	MC241	MO.5-33	1FM-33	1468-0003	Audio Plate Bypass
15	100	500	C-8F3-113	5W5T1	MC235	MO.5_31	1FM-31	1468-0001	Diode Filter
16	100	500	C-8F3-113	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor
17	820	500	C-8F3-247						Fixed Padder
18	330	500	C-8F3-119	5W5T35	MC243	MO.5-333	1FM-35	1468-00035	RF Coupling
19	100	500	C-8F3-113	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Ext. Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
20A	500KΩ	1	A-10A-1720	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 20A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

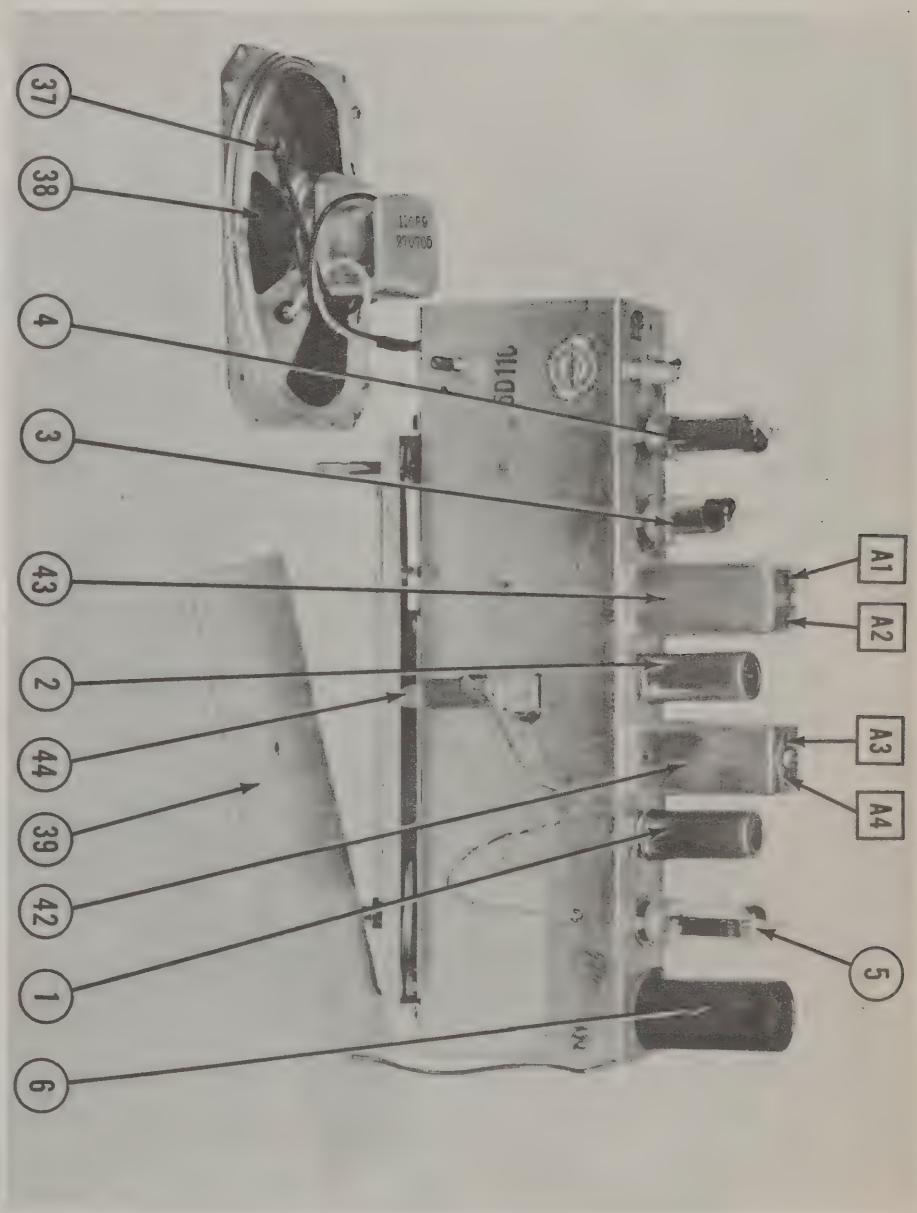
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
21	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Or. Oscillator Grid
22	220KΩ	½	C-9B1-90	BTS-220K	Red-Red-Yl. Converter Grid
23	680Ω	½	C-9B1-60	BTS-680	Blue-Gray-Br. Oscillator Coil Shunt
24	560KΩ	½	C-9B1-95	BTS-560K	Grn.-Blue-Yl. Series Phono
25	100Ω	½	C-9B1-50	BW-½-100	Br.-Blk.-Br. IF Cathode
26	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Series Volume Control
27	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
28	15 Meg.	½	C-9B1-302	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
29	220KΩ	½	C-9B1-90	BTS-220K	Red-Red-Yl. AF Plate Load
30	560KΩ	½	C-9B1-95	BTS-560K	Grn.-Blue-Yl. Output Grid
31	150Ω	½	C-9B1-52	BW-½-150	Br.-Grn.-Br. Output Cathode
32	1200Ω	1	C-9B2-63	BTA-1200	Br.-Red-Red Filter
33	220Ω	1	C-9B2-54	BW-1-220	Red-Red-Br. Filter
34	27Ω	½	C-9B1-43	BW-½-27	Red-Vi.-Blk. Surge Limiter
35	33Ω	1	C-9B2-44	BW-1-33	Or.-Or.-Blk. Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	INSTALLATION NOTES
36	2100Ω	3.7Ω	190Ω	.7Ω	B-12C-10074-1	A-8076	T2S45	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA BELMONT PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
37	PM	3.7Ω	B-18A-11089			
	CONE DIA.	VC DIA.				
38	3-7/8" x 6"	1/2"	CONE HAS SPECIAL ADJUSTMENT FEATURE-ORDER FROM MANUFACTURER			

R F COILS

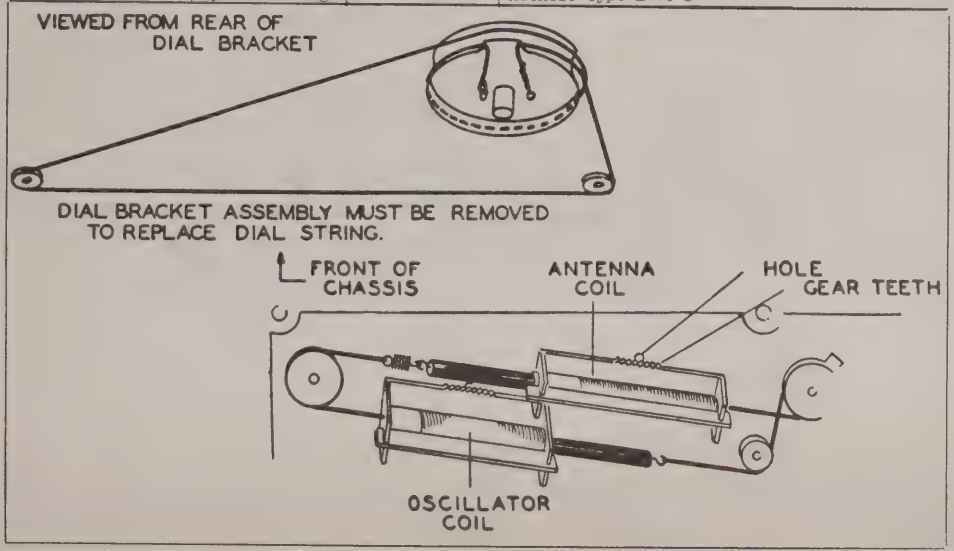
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA BELMONT PART No.	REPLACEMENT DATA MEISSNER PART No.	
39	Ant. Plate			B-2E-12192		
40	Ant. Coil		9Ω			Items 40 & 41 are slug tuned, ganged together and are part of the tuning assy.
41	Osc. Coil	1.5Ω	6.5Ω			
42	Input IF	25Ω	37Ω	B-13A-10728	16-6666	
43	Output IF	25Ω	25Ω	B-13B-10729	16-6667	

DIAL LIGHT

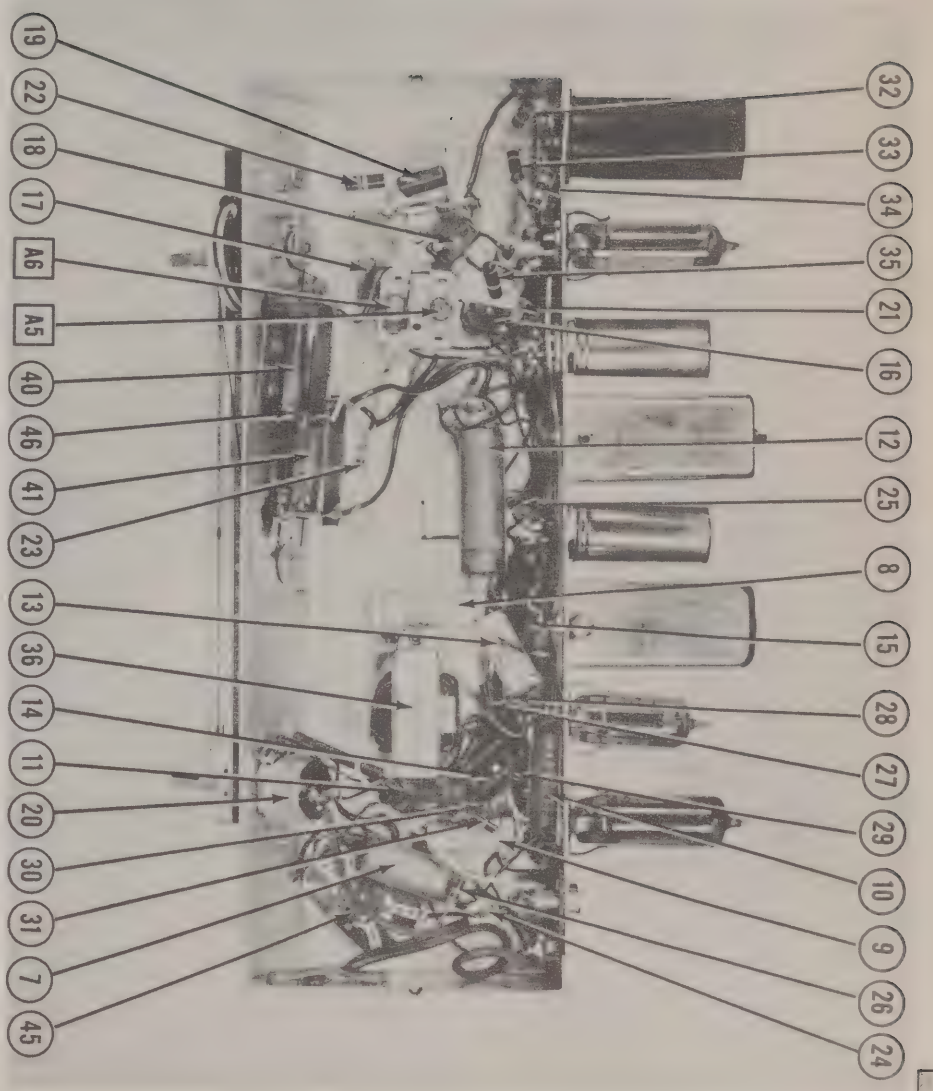
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA BELMONT PART No.		INSTALLATION NOTES
44	Bayonet	6-8	0.15	Brown	A-46A-10793		Type 47

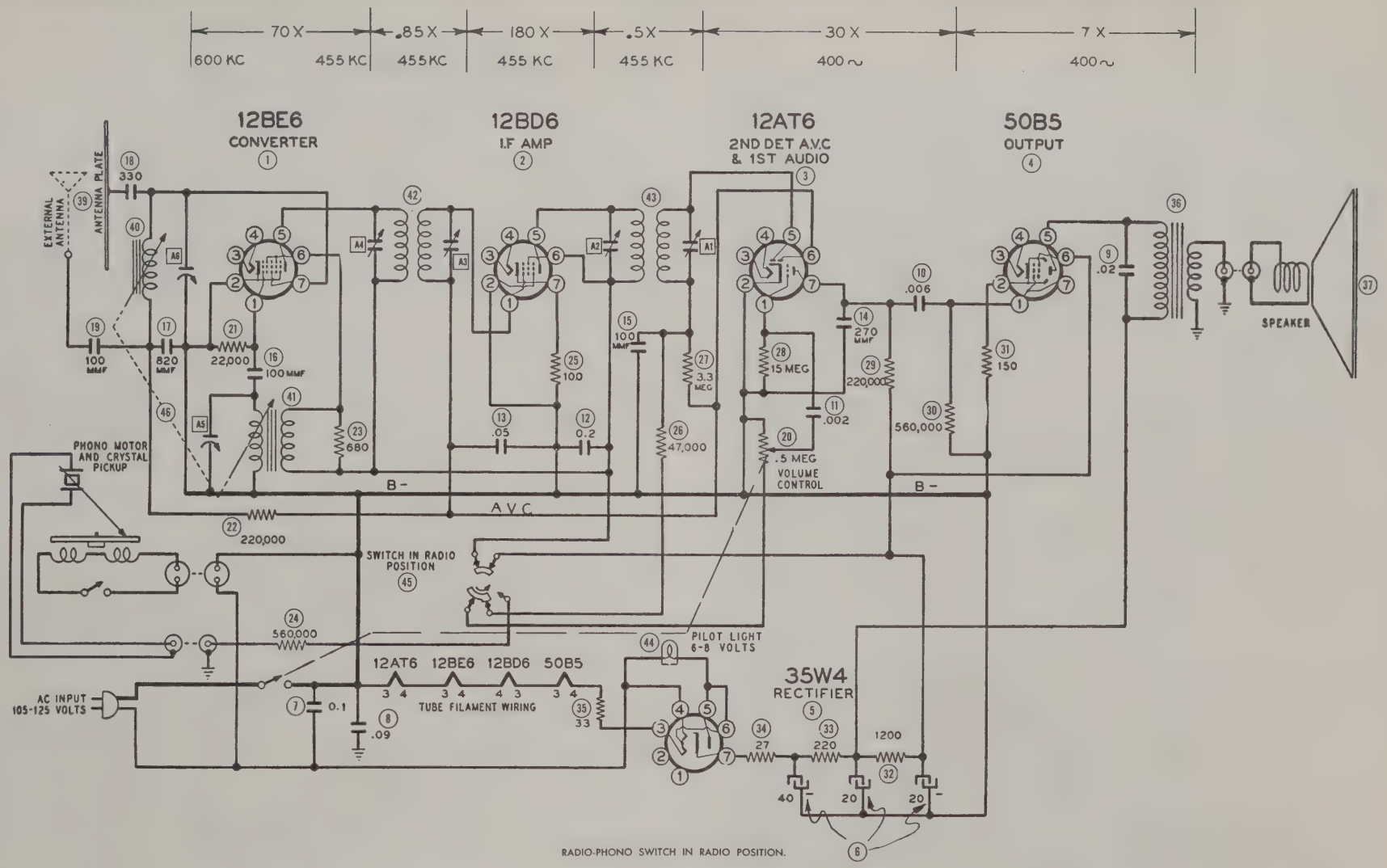
MISCELLANEOUS

ITEM No.	PART NAME	BELMONT PART No.	NOTES
45	Switch	A-20A-10722	Radio-Phono
46	Tuner Unit	C-211-10171	
A5 } A6 }	Trimmer	A-8E-10723	{ Osc. Adj. { Ant. Adj.
	Dial Scale	A-6D-10163	
	Crystal Cartridge		ASTATIC Type L-70-S



CHASSIS—BOTTOM VIEW





IF=455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-3V. DC	0V.	11V. AC	23V. AC	77V. DC	77V. DC	-3V. DC
2	12BA6	-.6V. DC	0V.	34V. AC	23V. AC	77V. DC	77V. DC	-.9V. DC
3	12AT6	-.6V. DC	0V.	0V.	11V. AC	-.5V. DC	-.5V. DC	44V. DC
4	50B5	0V.	4.9V. DC	34V. AC	75V. AC	90V. DC	77V. DC	0V.
5	35W4	0V.	75V. AC	80V. AC	117V. AC	106V. AC	106V. AC	108V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	22 K Ω	0 Ω	12 Ω	23 Ω	50 K Ω	50 K Ω	4 MEG.
2	12BA6	4 MEG.	0 Ω	34 Ω	23 Ω	50 K Ω	50 K Ω	100 Ω
3	12AT6	15 MEG.	0 Ω	0 Ω	12 Ω	500 K Ω	4 MEG.	270 K Ω
4	50B5	600 K Ω	150 Ω	34 Ω	82 Ω	50 K Ω	50 K Ω	600 K Ω
5	35W4	INF.	82 Ω	118 Ω	150 Ω	145 Ω	145 Ω	50 K Ω

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

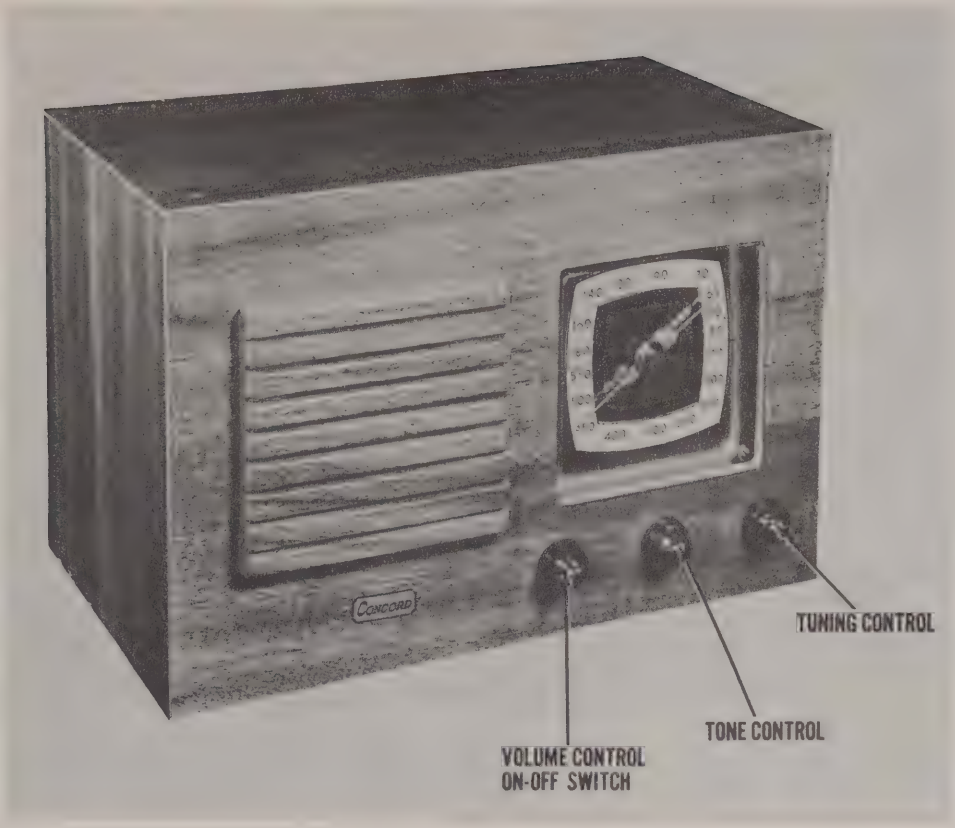
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4712-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CONCORD
MODEL 6T61-W



CONCORD
MODEL 6T61-W

CONCORD MODEL 6T61W

TRADE NAME	Concord, Model 6T61W
SUPPLIER	Concord Radio Corp., 901 W. Jackson Blvd., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES SIX)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC -DC
TUNING RANGE—BROADCAST	540-1850KC RATING .235 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CONCORD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	7W	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CONCORD PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150		BRD3515	2N520	M-5030-150	TA-830	PRSA150-50-30	Filter
B	30	150							"
8	.01	400		DT4S1	TP421	S-4-01	TC-11	464-01	Line Filter
9	.02	600		DT6S2	TP612	S-6-02	TC-12	664-02	Output Plate Bypass
10	.01	400		DT4S1	TP421	S-4-01	TC-11	464-01	Audio Coupling
11	.005	600		DT6D5	TP408	S-6-005	TC-25	664-005	" "
12	.05	400		DT4S5	TP426	S-4-05	TC-15	464-05	AVC Filter
13	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-0025	Audio Plate Bypass
14	.1500	600		1W5D2	MC457	MW.5-22	1FM-22	1467-002	Tone Compensation
15	390	500							Diode Filter
16	30	500							Osc. Grid Capacitor
17	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling
38	10			5W5Q1	MC215	MO.5-41	1FM-41	1468-00001	Fixed Trimmer Cer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CONCORD PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	500KΩ	1		MR46	D13-133	M-66-3	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 18A per instructions
C	Switch			M26	41	SW-A	" " " "
19A	5 Meg.	1		MR55	D13-139	M-66-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 19A per instructions

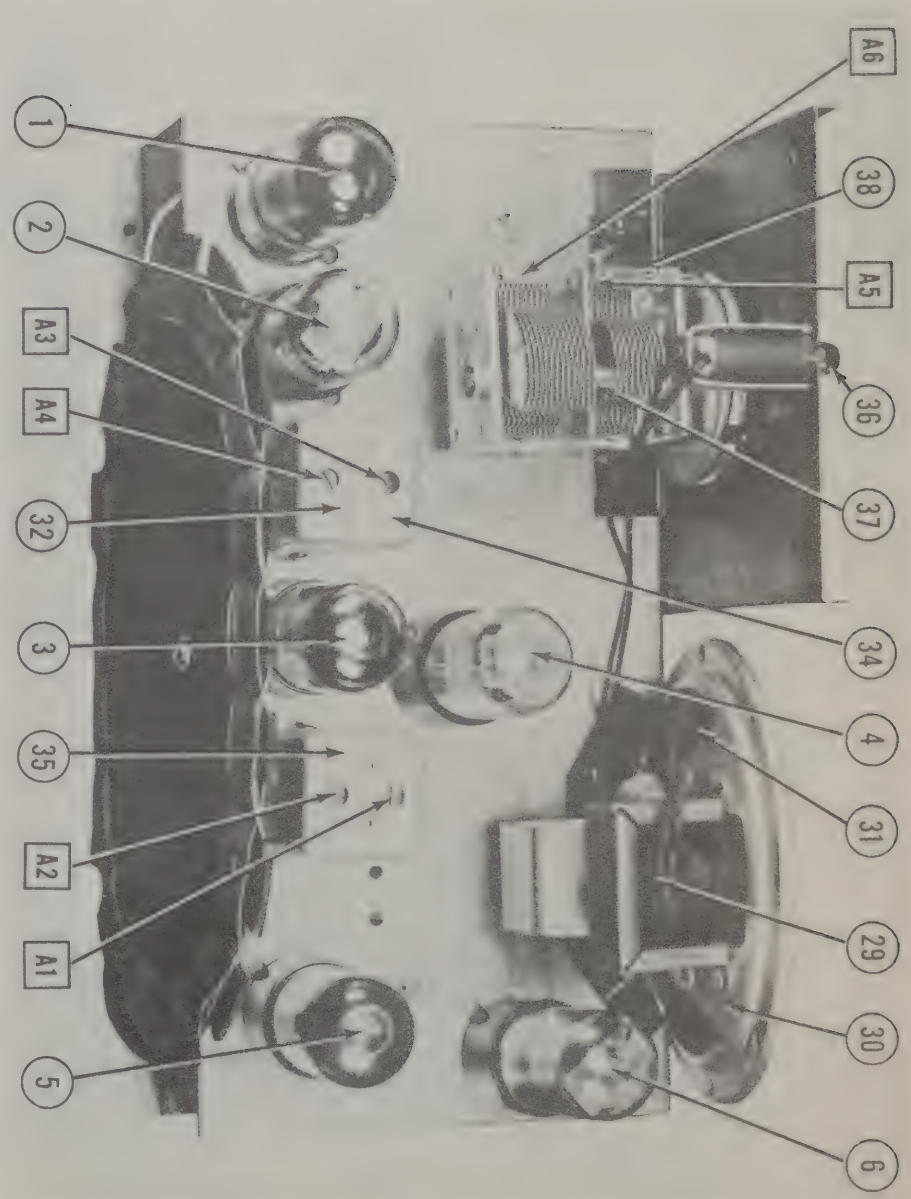
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CONCORD PART No.	IRC PART No.	IDENTIFICATION CODES
20	5KΩ	½		BTS-4700	Grn.-Blk.-Red RF Plate Load
21	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
22	2.7 Meg.	½		BTS-2.7 Meg.	Red-Vi.-Grn. AVC Network
23	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
24	250KΩ	½		BTS-270K	Red-Grn.-Yl. AF Plate Load
25	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
26	150Ω	2		BW-2-150	Br.-Grn.-Br. Output Cathode
27	2700Ω	½		BT-2-2700	Red-Vi.-Red Filter
28	10KΩ	½		BTS-10K	Br.-Blk.-Or. Converter Grid

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CONCORD PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
29	1800Ω	2.8Ω	140Ω	.6Ω		A-3876	T22S4E		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC HT.	CONCORD PART No.	JENSEN PART No.		
30	Ft.	2.5Ω		ST-105 Mod. P5-X		
	CONE DIA.	VC DIA.				
31	4-7/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

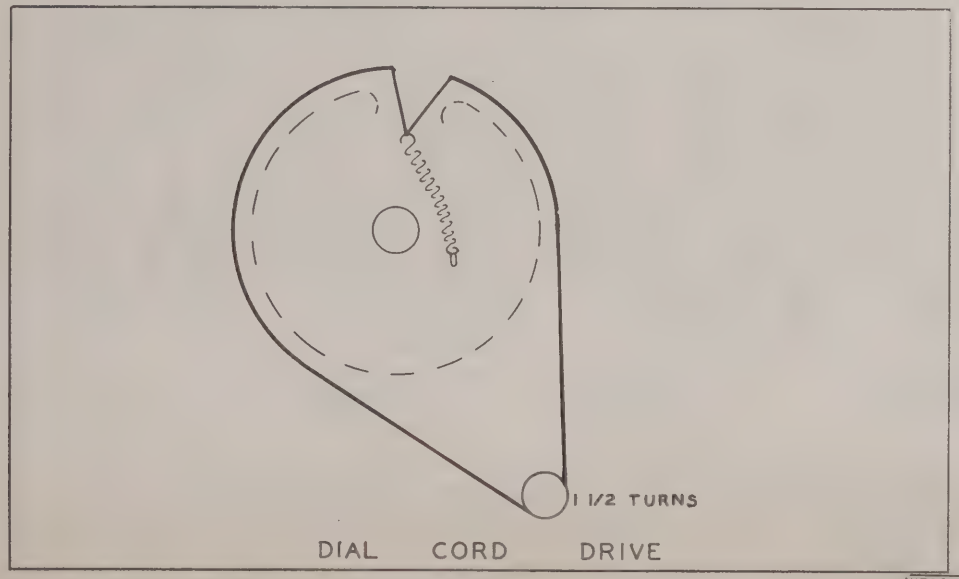
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CONCORD PART No.	MEISSNER PART No.	
32	Loop Ant.		1.5Ω			
33	Osc. Coil		6.5Ω		14-1540	
34	Input IF	19Ω	19Ω		16-6658	
35	Output IF	20Ω	20Ω		16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CONCORD PART No.		
36	Bayonet	6-8	0.15	Br W			Ty. 47

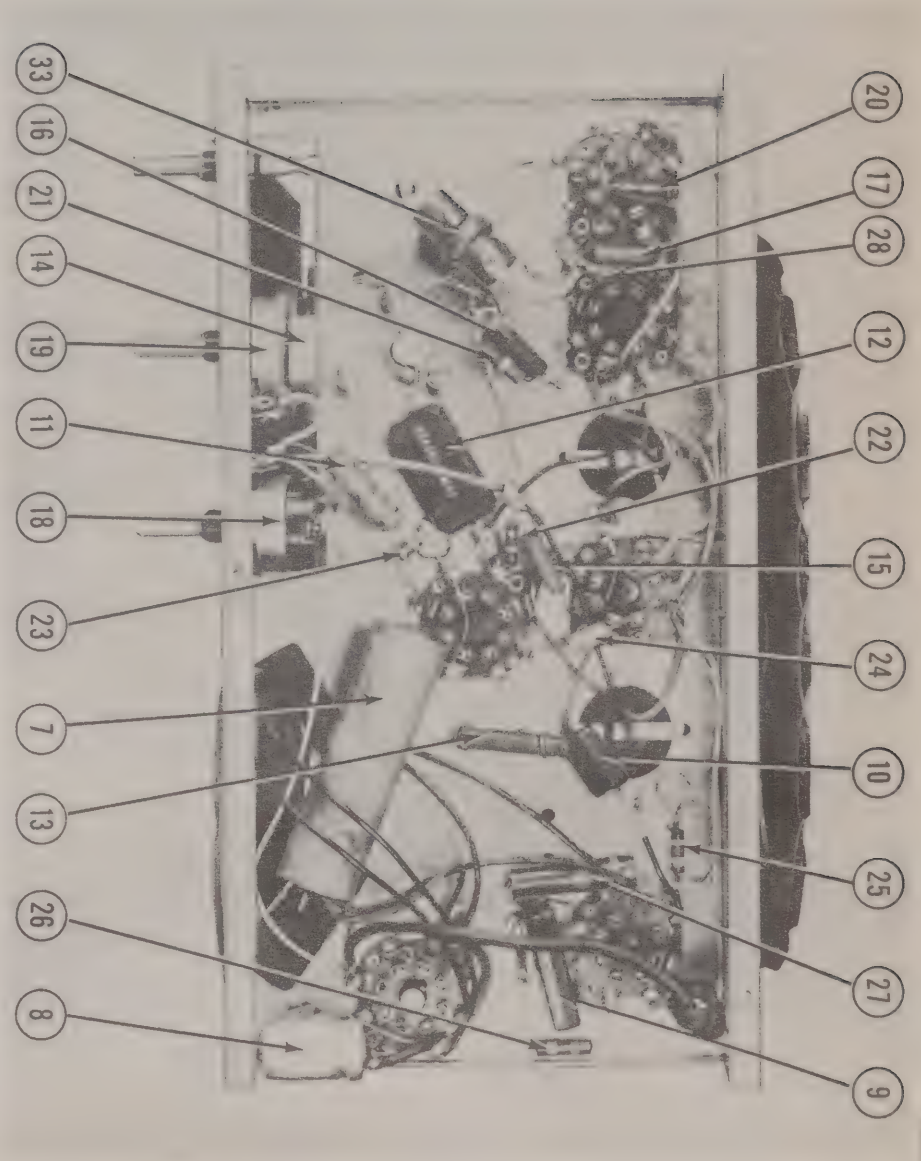
MISCELLANEOUS

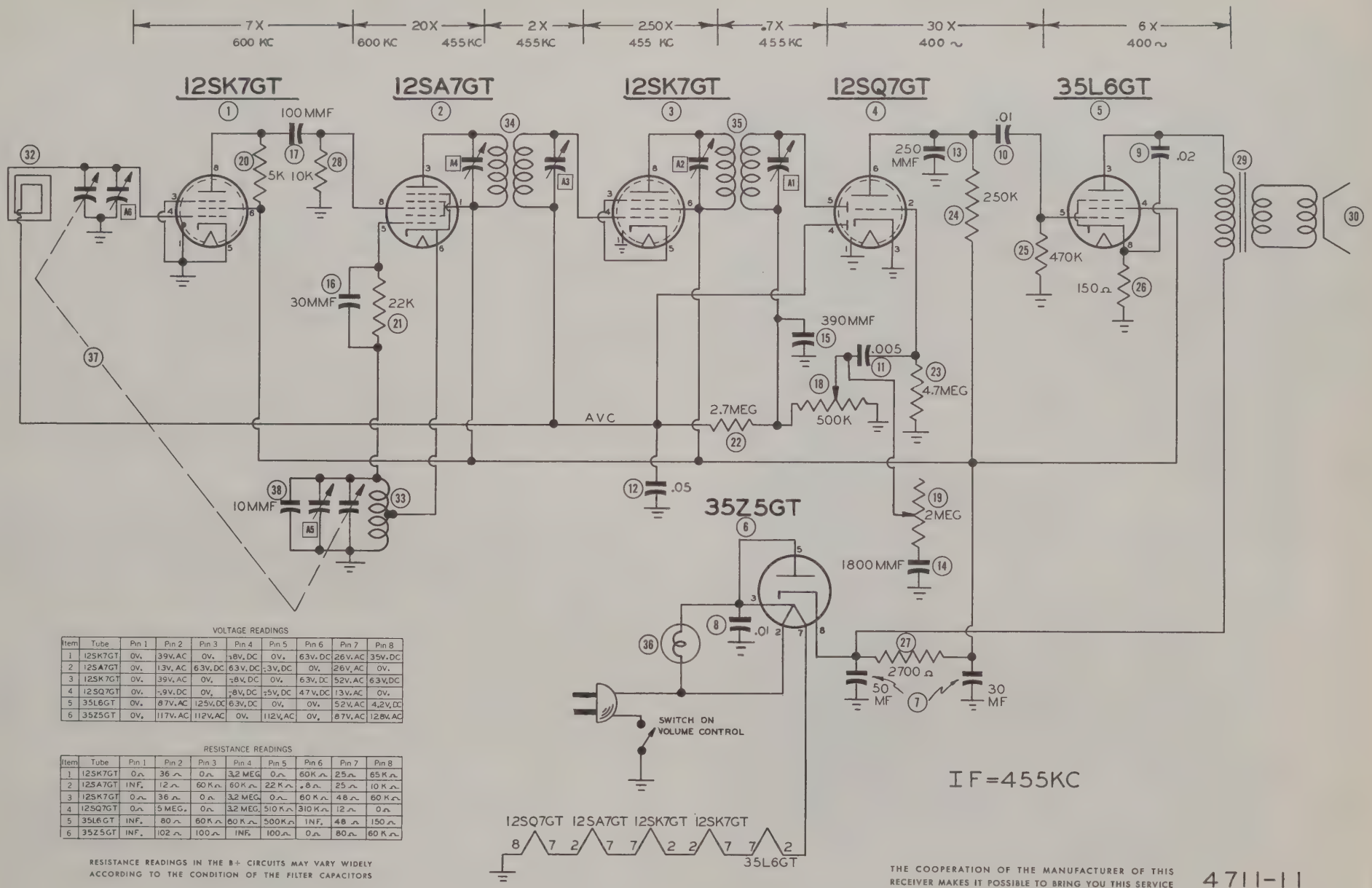
ITEM No.	PART NAME	CONCORD PART No.	NOTES
37	2 Gang Var. Cap		17-552 MMF, 28-195 MMF



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	39V. AC	0V.	-8V. DC	0V.	63V. DC	26V. AC	35V. DC
2	12SA7GT	0V.	13V. AC	63V. DC	63V. DC	-3V. DC	0V.	26V. AC	0V.
3	12SK7GT	0V.	39V. AC	0V.	-8V. DC	0V.	63V. DC	52V. AC	63V. DC
4	12SQ7GT	0V.	-9V. DC	0V.	-8V. DC	-5V. DC	47V. DC	13V. AC	0V.
5	35L6GT	0V.	87V. AC	125V. DC	63V. DC	0V.	0V.	52V. AC	4.2V. DC
6	35Z5GT	0V.	117V. AC	112V. AC	0V.	112V. AC	0V.	87V. AC	128V. AC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0Ω	36 Ω	0Ω	3.2 MEG	0Ω	60K Ω	25Ω	65K Ω
2	12SA7GT	INF.	12 Ω	60K Ω	60K Ω	22K Ω	.8Ω	25Ω	10K Ω
3	12SK7GT	0Ω	36 Ω	0Ω	3.2 MEG.	0Ω	60K Ω	48 Ω	60K Ω
4	12SQ7GT	0Ω	5 MEG.	0Ω	3.2 MEG.	510K Ω	310K Ω	12Ω	0Ω
5	35L6GT	INF.	80 Ω	60K Ω	60K Ω	500K Ω	INF.	48 Ω	150 Ω
6	35Z5GT	INF.	102 Ω	100 Ω	INF.	100 Ω	0Ω	80Ω	60K Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4711-11

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DAVID BOGEN MODEL GO-125

TRADE NAME	David Bogen, Model GO-125
MANUFACTURER	David Bogen Co., Inc., 663 Broadway, New York 12, N.Y.
TYPE SET	AC Operated 8 Tube Amplifier
TUBES (EIGHT)	Types, 6SL7 1st AF-Phase Inv., (2) 6SN7 Driver, 6SN7 Voltage Regulator, (2) 807 Power Output, 5Y3GT Rectifier, 5R4GY Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 1.6 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SL7	0V.	85V. DC	1.7 V. DC	0V.	85V. DC	1.7V. DC	3.2V. AC	3.2V. AC	
2	6SN7	-30V. DC	280V. DC	-30V. DC	-30V. DC	280V. DC	-30V. DC	3.2V. AC	3.2V. AC	
3	6SN7	-28V. DC	280V. DC	-28V. DC	-28V. DC	280V. DC	-28V. DC	3.2V. AC	3.2 V. AC	
4	6SN7	-3.7V. DC	280V. DC	0V.	-3.7V. DC	280V. DC	0V.	3.2V. AC	3.2V. AC	
5	807	3.2V. AC	280V. DC	-32V. DC	0V.	3.2 V. AC				910V. DC
6	807	3.2V. AC	280V. DC	-32V. DC	0V.	3.2V. AC				910V. DC
7	5Y3GT	0V.	310V. DC	0V.	330V. AC	0V.	330V. AC	0V.	310V. DC	
8	5R4GY	0V.	910V. DC	0V.	1000V. AC	0V.	1000V. AC	0V.	910V. DC	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SL7	110 KΩ	480 KΩ	4 KΩ	15KΩ	480 KΩ	4 KΩ	.1Ω	.1Ω	
2	6SN7	400KΩ	10 KΩ	1.1KΩ	400KΩ	10 KΩ	1.1KΩ	.1Ω	.1Ω	
3	6SN7	400KΩ	10 KΩ	1 KΩ	400KΩ	10KΩ	1 KΩ	.1Ω	.1Ω	
4	6SN7	39 KΩ	10 KΩ	0Ω	39KΩ	10 KΩ	0Ω	.1Ω	.1Ω	
5	807	.1Ω	10 KΩ	450Ω	0Ω	.1Ω				40KΩ
6	807	.1Ω	10 KΩ	450Ω	0Ω	.1Ω				40KΩ
7	5Y3GT	INF.	10 KΩ	INF.	460Ω	INF.	460Ω	INF.	10 KΩ	
8	5R4GY	INF.	40 KΩ	INF.	80Ω	INF.	74Ω	INF.	40 KΩ	

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

DAVID BOGEN MODEL 30-125

TUBES

ITEM No.	USE	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	1st AF Phase Inv	6SL7	6SL7	8BD	
2	Driver	6SN7	6SN7	8BD	
3	Driver	6SN7	6SN7	8BD	
4	Voltage Regulator	6SN7	6SN7	8BD	
5	Power Output	807	807	T-5BB	
6	" "	807	807	T-5BB	
7	Rectifier	5Y3GT	5Y3GT	5T	
8	"	5R4GY	5R4GY	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DAVID BOGEN PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	8	450		KR588A	RM262	D-2x8-450	PLS-88	GL450-8-8	Filter - Red
B	8	450							" - Blue
10	2	1000		TJH10020	TX805	XCLU20-2	CR-22	1009-2	"
11	50	50		BR505	TC39	M-50-50	TA-50	PRS50-50	Bias Filter
12	50	50		BR505	TC39	M-50-50	TA-50	PRS50-50	Cath. Bypass
13	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	Line Bypass
14	.25	1000		DYR10025	C31003	XKMR10-.25	BR-251	1030-.25	Filter
15	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	Audio Coupling
16	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	" "
17	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	" "
18	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Feedback

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DAVID BOGEN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	100KΩ	1		MR41	D11-128	M-49-S	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 19A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DAVID BOGEN PART No.	IRC PART No.	IDENTIFICATION CODES
20	620Ω	½		BTS-680	Blue-Red-Br. AF Cathode
21	3900Ω	½		BTS-3900	Or.-White-Red AF Cathode
22	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
23	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Phase Inverter Plate Load
24	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Phase Inverter Grid
25	15KΩ	½		BTS-15K	Br.-Grn.-Or. Phase Inverter Grid
26	3900Ω	½		BTS-3900	Or.-White-Red Phase Inverter Cathode
27	560Ω	1		BTA-560	Grn.-Blue-Br. Driver Cathode
28	560Ω	1		BTA-560	Grn.-Blue-Br. Driver Cathode
29	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Driver Grid
30	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Driver Grid
31	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Feedback
32	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Voltage Regulator Grid
33	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Voltage Regulator Grid
34A	10KΩ		R1001		Bleeder
B	40KΩ				"
35	1000Ω		R1000	DHA-1000	Bias Network

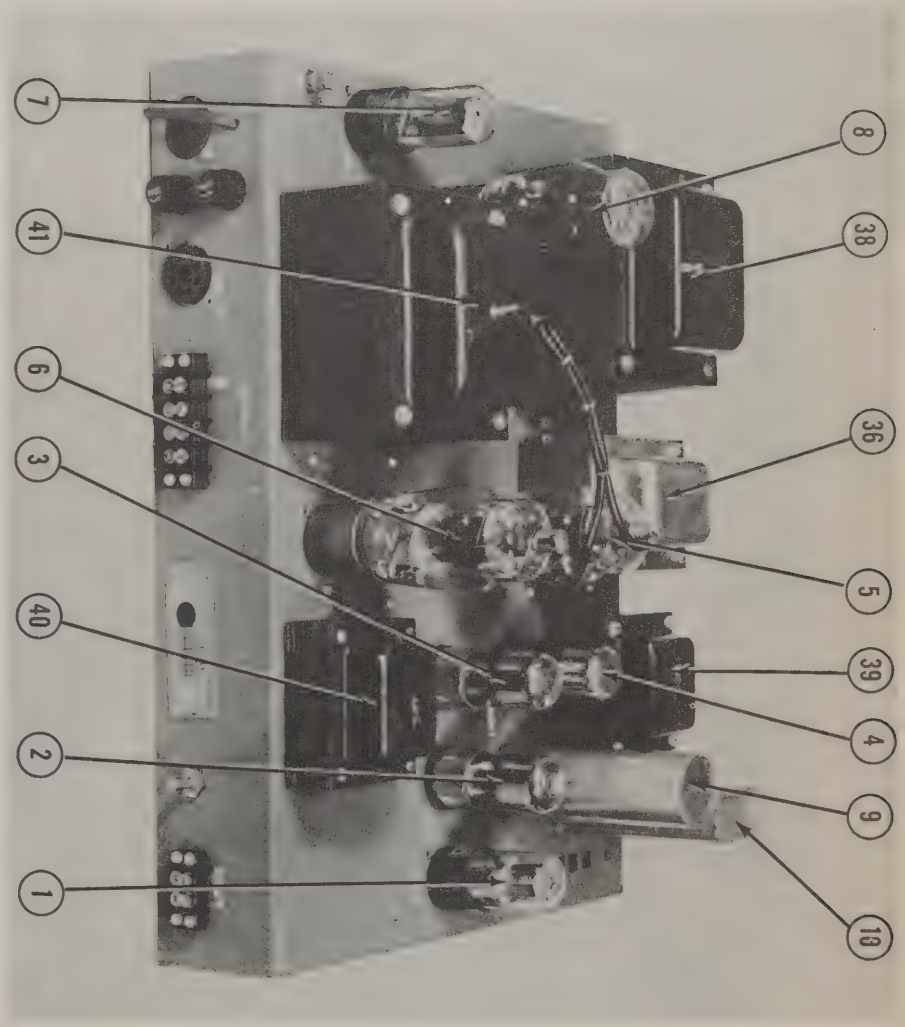
FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA: DAVID BOGEN PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
36	.048A	95Ω	75 Henries	T512B	C-1709†	T20C54†	†Drill new mounting holes.
37	.122A	190Ω	5.5 Henries	T501B	C-2303*		*Drill one new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	
38	117V AC @ 1.1A	2000V CT @ .048A	660V CT @ .122A		T357B			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (FILAMENT)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	DAVID BOGEN PART No.	STANCOR PART No.	THORDARSON PART No.	
39	117V AC @ .49A	5.0V AC @ 2.0A	5.0V AC @ 2.0A	6.3V AC @ 4.1A	T30B	P-6338†		†Drill new mounting holes.

TRANSFORMER (DRIVER)

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	INDUCTANCE	DC RES.	DAVID BOGEN PART No.	STANCOR PART No.	THORDAR'N PART No.		
40	10 Henries CT	140Ω CT	T-11B		T20D73#		#Connect primary only.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DAVID BOGEN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
41	[illegible] CT	70 V. 90Ω 140V.	33Ω CT	.4Ω .6Ω .7Ω	T254B				See speaker installation copy below.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					DAVID BOGEN PART No.		
42	Bayonet	6-8	0.25	Blue			Type 44

MISCELLANEOUS

ITEM No.	PART NAME	DAVID BOGEN PART No.	NOTES
43	Switch		On-Off
44	Switch		Interlock
45	Fuse		1½ Amp.
46	Fuse		3 Amp.

OUTPUT CIRCUIT

Three output terminals and a ground terminal are provided on a barrier strip at the left rear of the chassis. Constant voltage output taps of 140v and 70v are provided for normal speaker output connections. A third tap of 90 ohms impedance is also provided for high power installations using multi-driver type loudspeakers.

Speakers may be connected in parallel to either of the constant voltage taps. Matching transformer impedances may be readily calculated by means of the following formula: $Z = \frac{E2}{P}$

For the 140 volt tap

$$\text{Required Impedance} = \frac{20{,}000}{\text{Desired Power}}$$

Example: To obtain a 2 watt output, $Z = \frac{20{,}000}{2} = 10{,}000$ ohms

For the 70 volt tap

$$\text{Required Impedance} = \frac{5{,}000}{\text{Desired Power}}$$

Example: For a 2 watt output, $Z = \frac{5{,}000}{2} = 2{,}500$ ohms

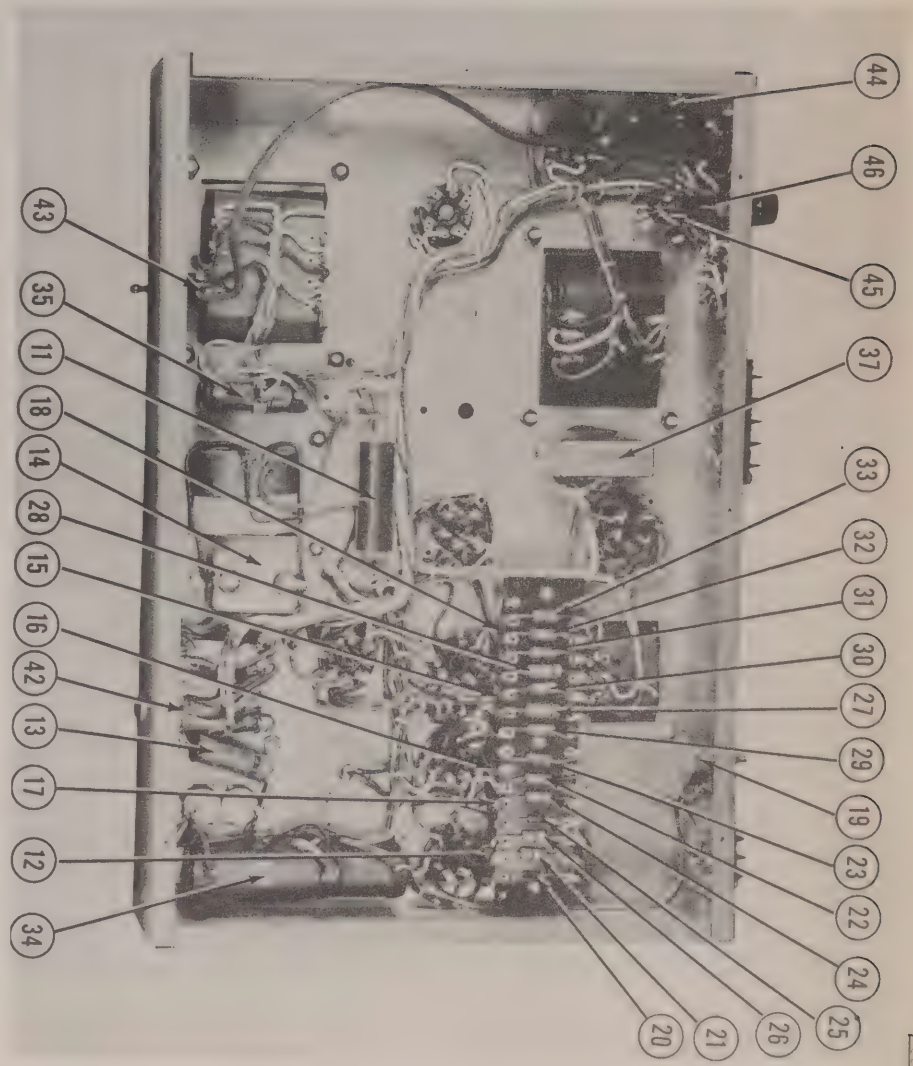
SPEAKER INSTALLATION

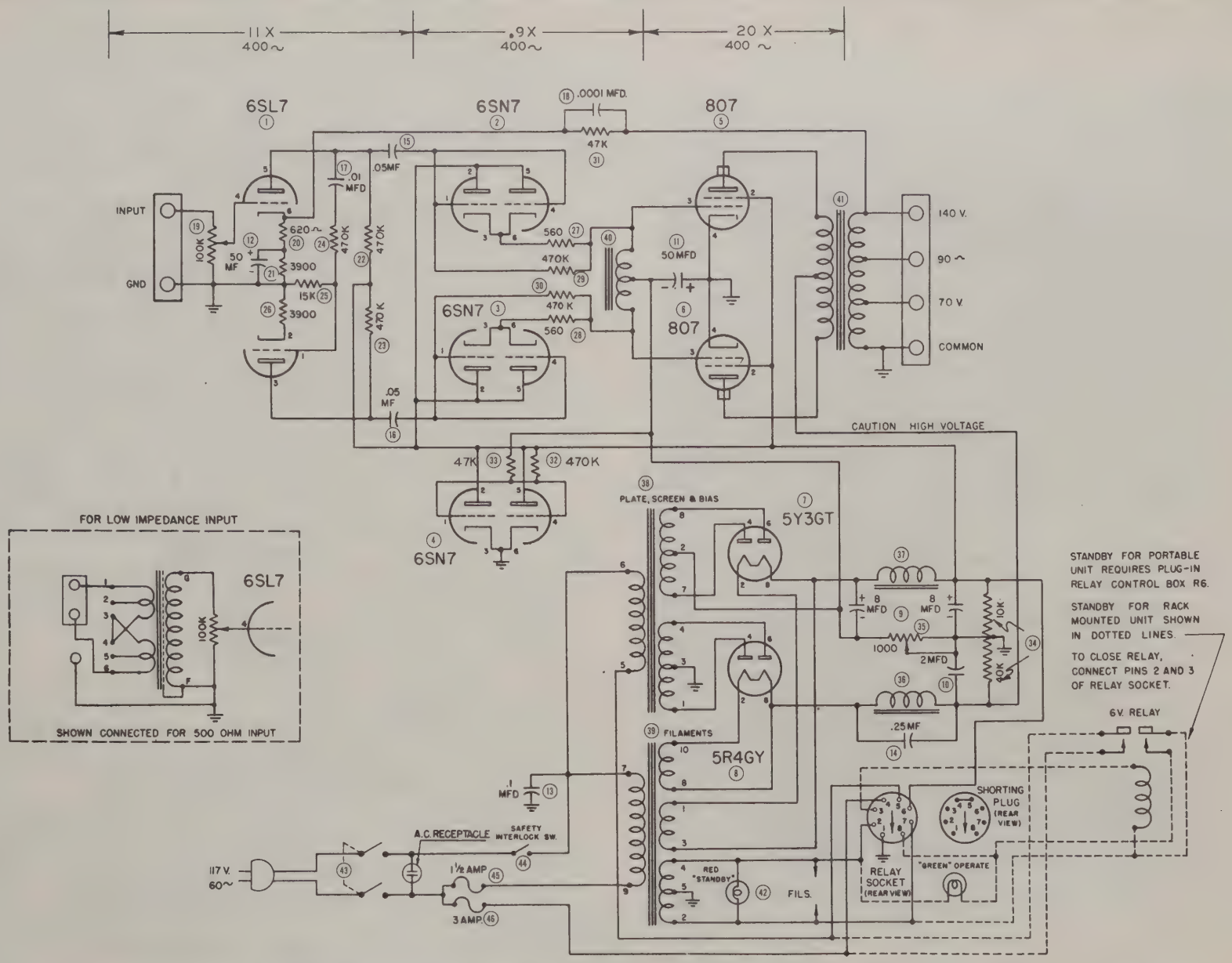
To assure correct power distribution, it is essential that the correct line matching transformer be used in conjunction with each speaker. The recommended Bogen transformer and proper impedance tap for the most commonly used powers are tabulated below. The impedances listed are based on a nominal 8 ohm voice coil impedance. If a 15 ohm voice coil speaker is employed, use a transformer incorporating a tap marked at ½ the value shown on the table. For example, to obtain 1 watt on a 70 volt line with an 8 ohm voice coil speaker, the table indicates use of a transformer tapped at 5,000 ohms. If a 15 ohm voice coil speaker is used, a tap marked 2,500 ohms should be employed.

Required Power	For 70V Tap	Transformer	For 140V Tap	Transformer
½ Watt	10,000 ohms	T45C		
1 Watt	5,000 ohms	T45C		
2 Watt	2,500 ohms	T25C	10,000 ohms	T45C
5 Watt	1,000 ohms	T5B	4,000 ohms	T25B
10 Watt	500 ohms	T5B	2,000 ohms	T5B
20 Watt			1,000 ohms	T5A

DAVID BOGEN MODEL CO-12S

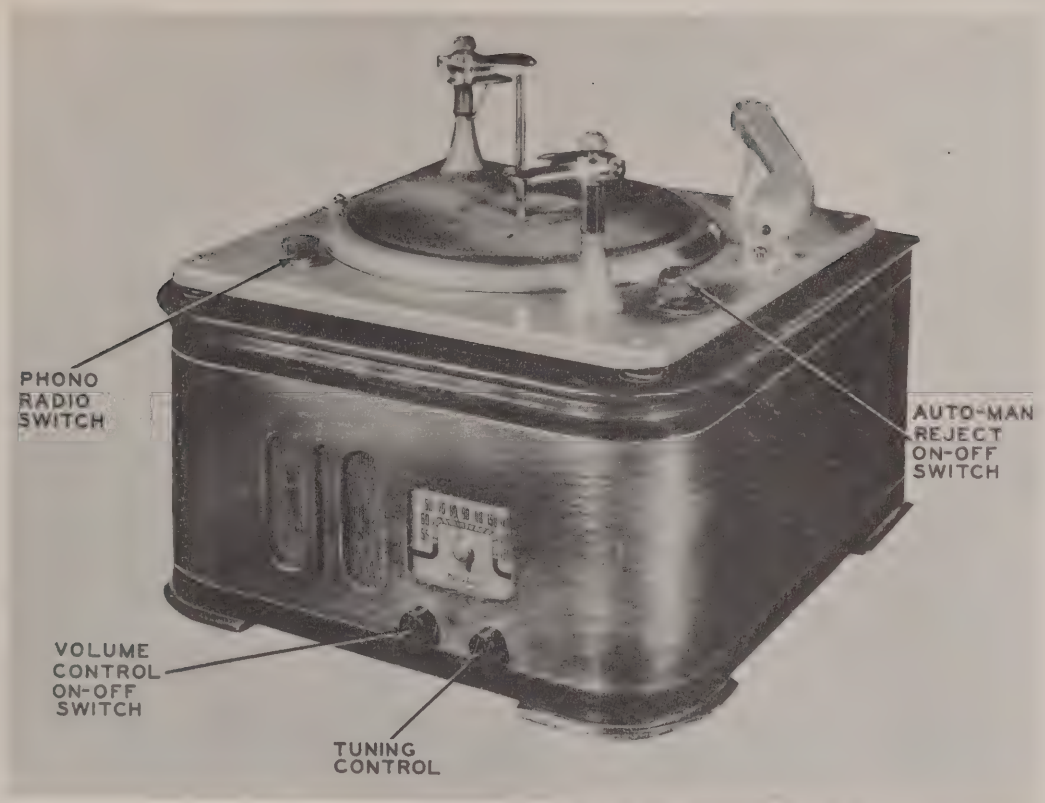
CHASSIS—BOTTOM VIEW





THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

DEARBORN
MODEL 100



DEARBORN
MODEL 100

DEARBORN MODEL 100

TRADE NAME	Dearborn, Model 100
MANUFACTURER	Dearborn Industries, Chicago, Ill.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1725KC

RATING .255 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMFD	High side to ext. ant. lug. Low side to ext. ground lug.	1500KC	1500KC	"	A5	Adjust for maximum output.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

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SET #22 DATE 8/47 FOLDER #4712-13

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		DEARBORN PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	DEARBORN PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	40	150		BRD4215	2N514	M-2x40-150	TA-240	PRSA150-40-20	Filter - Red
B	20	150							" - Blue
7	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
8	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	Output Plate Bypass
9	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
10	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	" "
11	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
12	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Audio Plate Bypass
13	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	IF Bypass Vol. Cont.
14	50	500		5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	DEARBORN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	1 Meg.	1		MK402	D13-137	AM-63-Z	Volume Control
B	Shaft			Not Req.	E	KSS-3	Attach to 15A per instructions
C	Switch			M26	41	SW-A	" " " " "

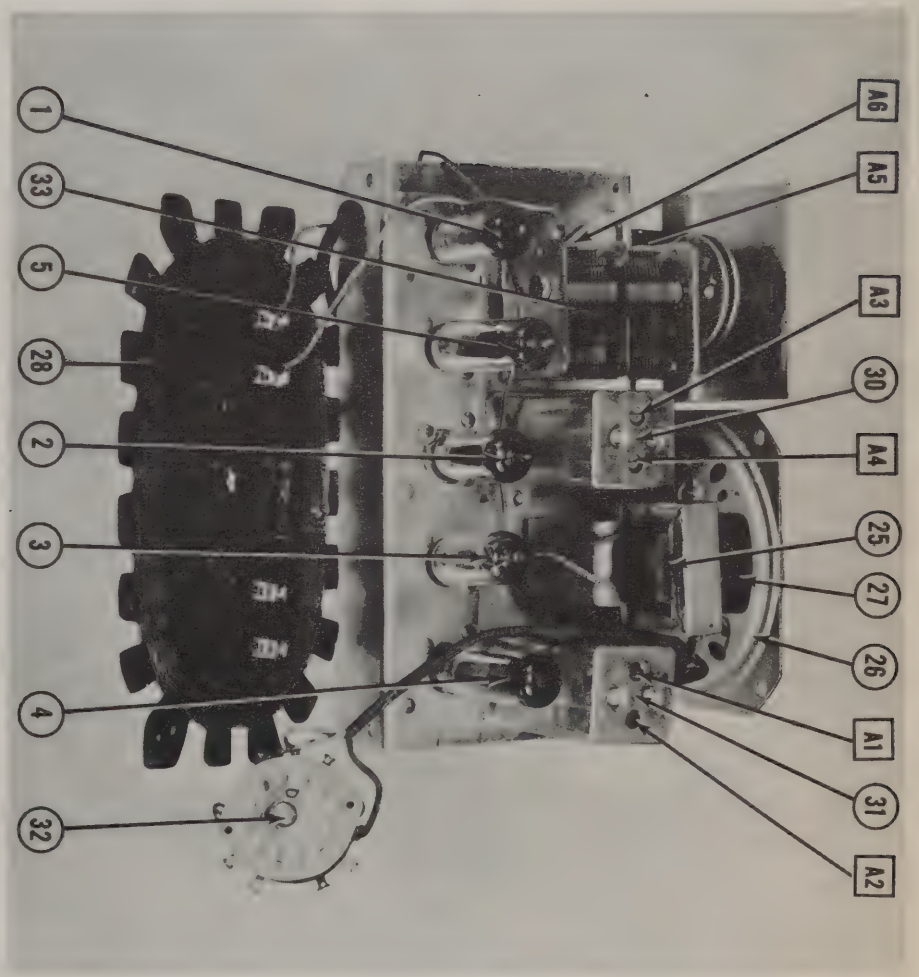
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	DEARBORN PART No.	IRC PART No.	
16	20KΩ	½		BTS-22K	Red-Blk.-Or. Oscillator Grid
17	1000Ω	½		BTS-1000	Br.-Blk.-Red Parasitic Suppressor
18	130Ω	½		BW-½-120	Br.-Or.-Br. IF Cathode
19	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
20	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
21	240KΩ	½		BTS-220K	Red-Yl-Yl. AF Plate Load
22	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
23	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
24	1000Ω	½		BTS-1000	Br.-Blk.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DEARBORN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
25	1800Ω	2.8Ω	175Ω	.9Ω		A-3876*	T22S45*		*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: DEARBORN PART No.	JENSEN PART No.		INSTALLATION NOTES
26	FIELD PM	VC IMP. 2.8Ω				
27	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

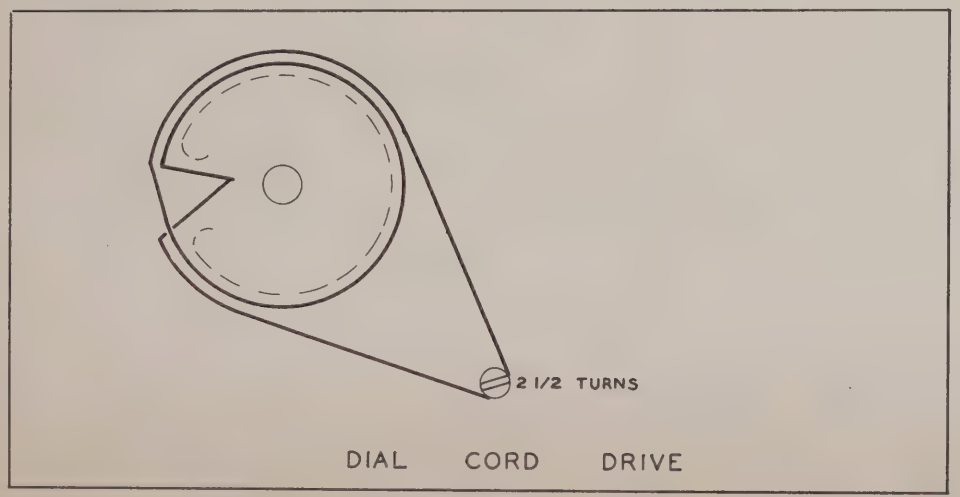
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: DEARBORN PART No.	MEISSNER PART No.	
28	Loop Ant.	.1Ω	2.5Ω	ALP-10004A		
29	Osc. Coil		6.2Ω		14-1040	
30	Input IF	21Ω	20Ω	TSP-10000	16-6658	
31	Output IF	21Ω	20Ω	TSP-10001	16-6660	

MISCELLANEOUS

ITEM No.	PART NAME	DEARBORN PART No.	NOTES
32	Switch		Radio-Phono
33	2 Gang Var. Cap.		28-428 MMF, 37-192 MMF
	Crystal Cartridge		ASTATIC Type L-70

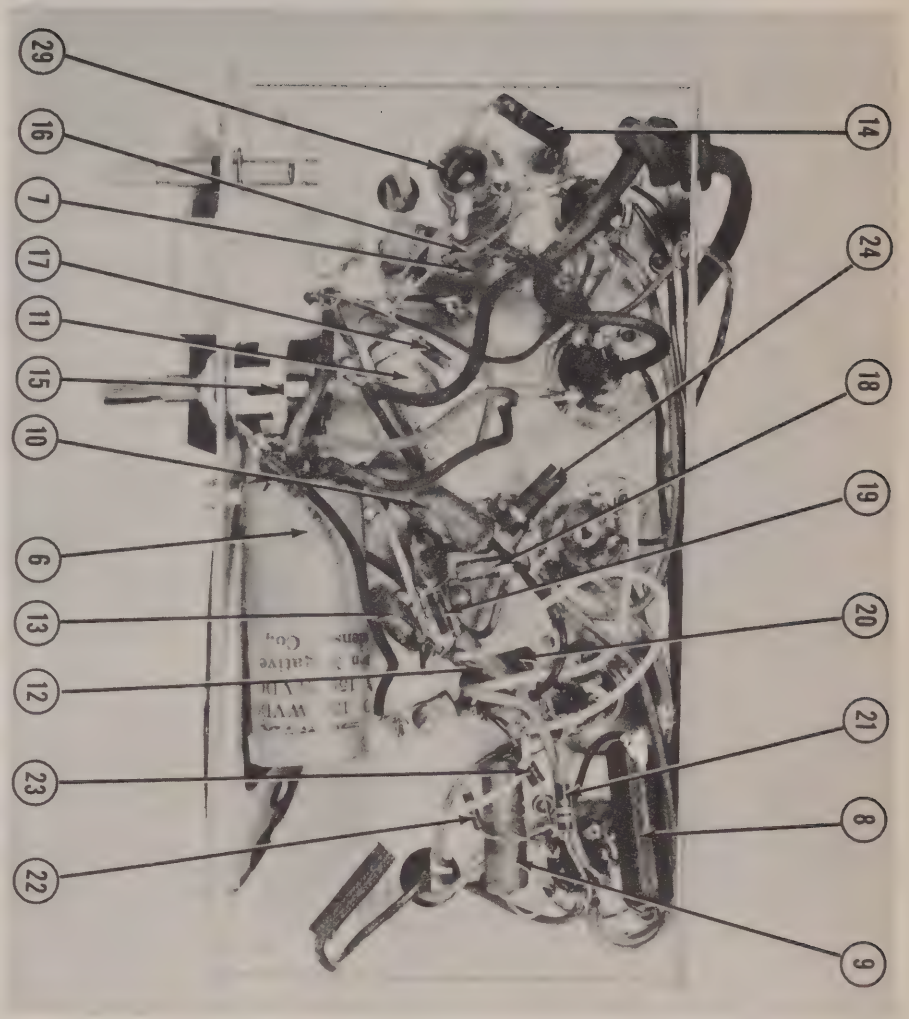
DISASSEMBLY INSTRUCTIONS

1. Loosen set screws and remove three control knobs.
2. Remove lock nut from radio phono control shaft.
3. Remove two wood screws holding phono to cabinet.
4. Lift up front of phono and remove four wood screws holding chassis mounting board in cabinet.
5. Remove staples holding loop antenna to side of cabinet.
6. Lift phono chassis and loop out through top of cabinet.
7. Unsolder phono motor leads.
8. Unsolder phono pickup leads.
9. Remove three hex head screws holding chassis to mounting board. Remove board.

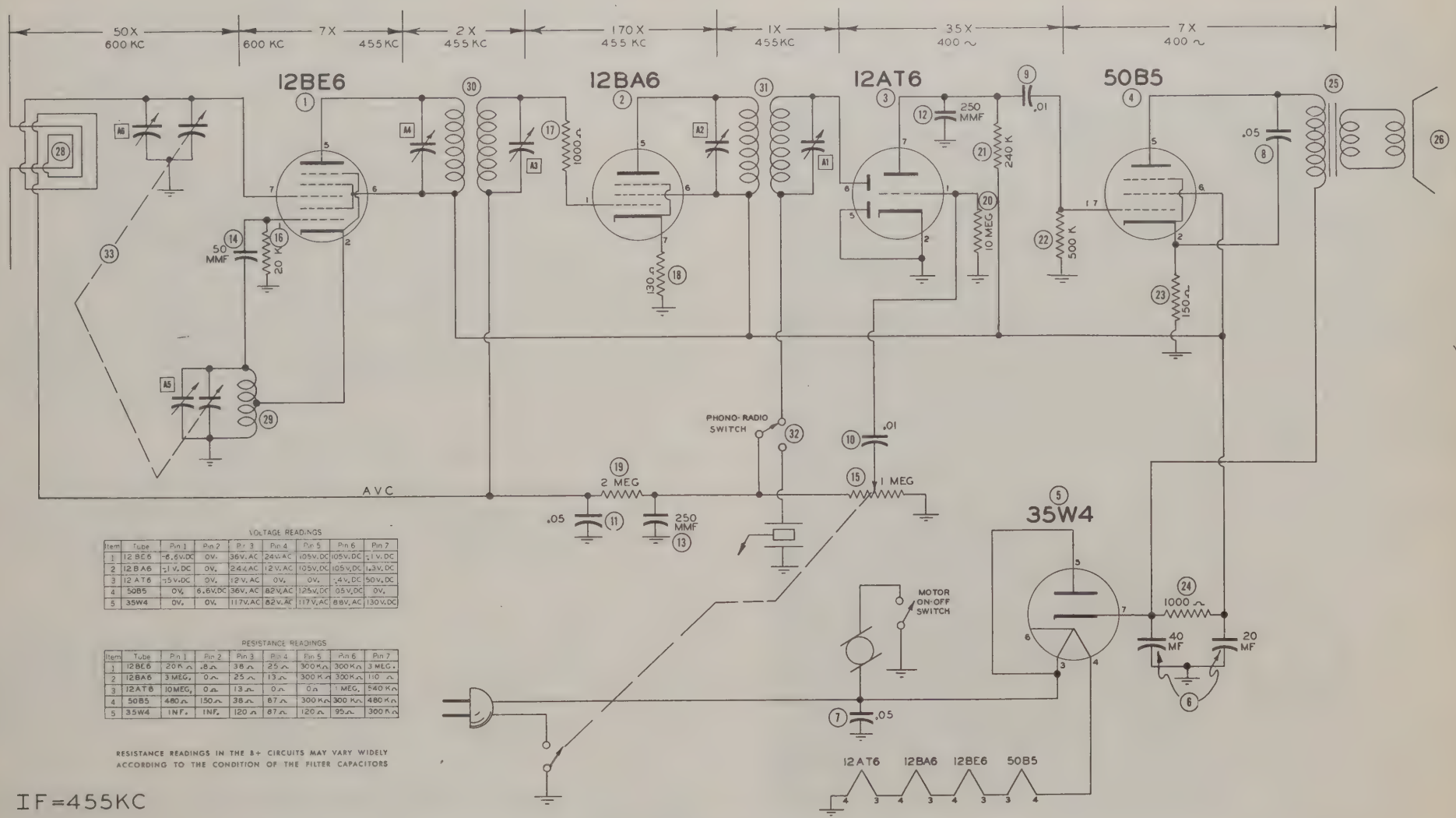


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



DEARBORN MODEL 100



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12 BE6	-6.6V.DC	0V.	36V. AC	24V.AC	105V. DC	105V. DC	-1 V. DC
2	12 BA6	-1 V. DC	0V.	24V.AC	12 V. AC	105V. DC	105 V. DC	1.3V. DC
3	12 AT6	-7.5 V. DC	0V.	12 V. AC	0V.	0V.	-.4 V. DC	50 V. DC
4	50B5	0V.	6.6V. DC	36V. AC	82 V. AC	125 V. DC	105 V. DC	0V.
5	35W4	0V.	0V.	117 V. AC	82 V. AC	117 V. AC	88V. AC	130 V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	20 K Ω	.8 Ω	38 Ω	25 Ω	300 K Ω	300 K Ω	3 MEG.
2	12BA6	3 MEG.	0 Ω	25 Ω	13 Ω	300 K Ω	300 K Ω	110 Ω
3	12AT6	10 MEG.	0 Ω	13 Ω	0 Ω	0 Ω	1 MEG.	540 K Ω
4	50B5	480 Ω	150 Ω	38 Ω	87 Ω	300 K Ω	300 K Ω	480 K Ω
5	35W4	INF.	INF.	120 Ω	87 Ω	120 Ω	95 Ω	300 K Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

IF=455KC

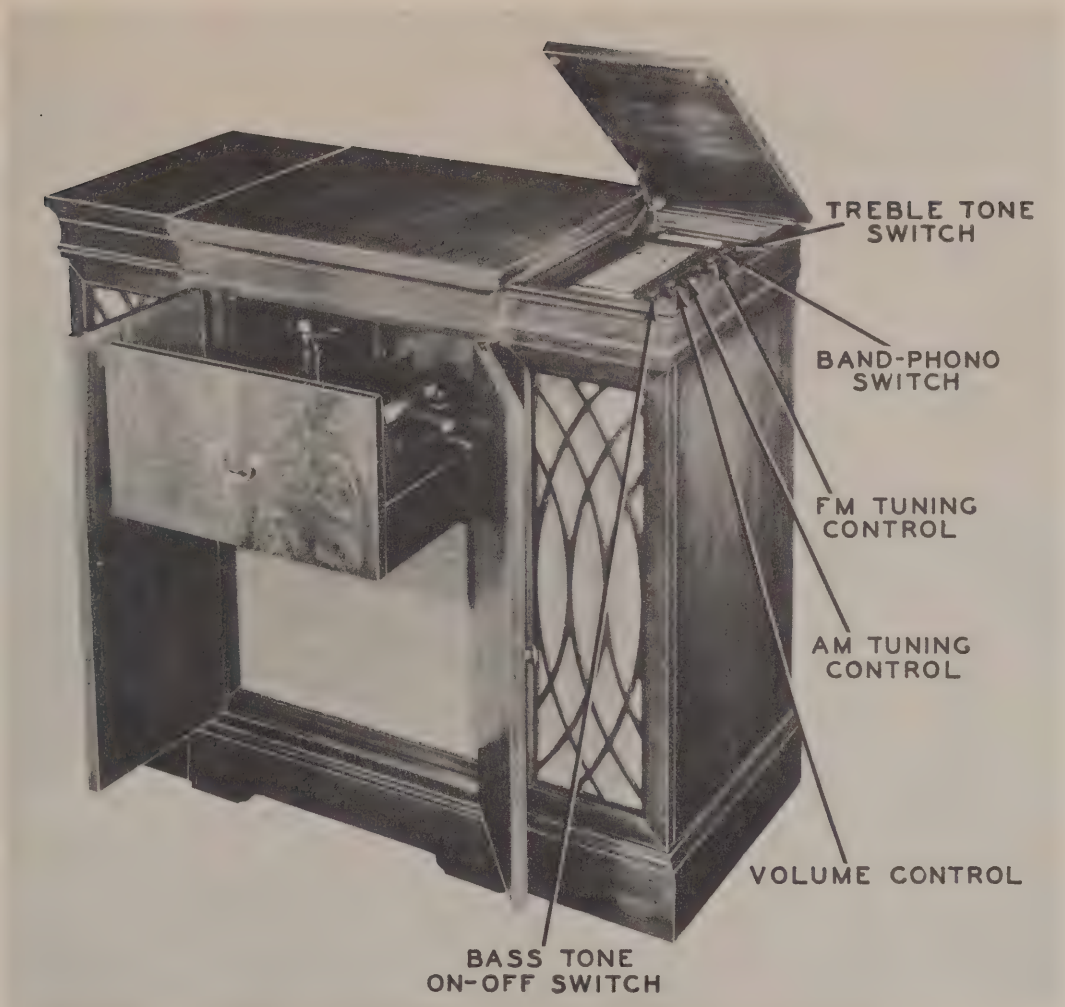
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4712-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ECHOPHONE
MODELS EC-403, EC-404



ECHOPHONE
MODELS EC-403, EC-404 PAGE 1

TRADE NAME	Echophone, Models EC-403, EC-404
MANUFACTURER	Hallicrafters Co., 2611 S. Indiana Ave., Chicago, Ill.
TYPE SET	AC Operated Phono-Radio Combination FM-AM Superheterodyne Receiver with Loop Antenna and Pushbutton Tuning.
TUBE (FIFTEEN)	Types, 6BA6 RF Amp., 6BE6 Mixer, 6J6 HF Osc.-AFC, 6SG7 1st IF Amp., 6SG7 2nd IF Amp., 6SG7 FM 3rd IF Amp.-AM Det.-AVC, 6SH7 or 6SG7 FM 4th IF Amp., 6AL5 FM Det., 6J5 1st AF Amp., 6J5 2nd AF Amp., 6SQ7 3rd AF Amp., 6SQ7 Phase Inverter, (2) 6V6GT Power Output, 5U4G Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	1.27 Amp. @ 117 Volts AC
TUNING RANGE--	BROADCAST 540-1700KC SHORT WAVE 5.8-18MC, 9-12MC, 15-18MC FM 88-108MC

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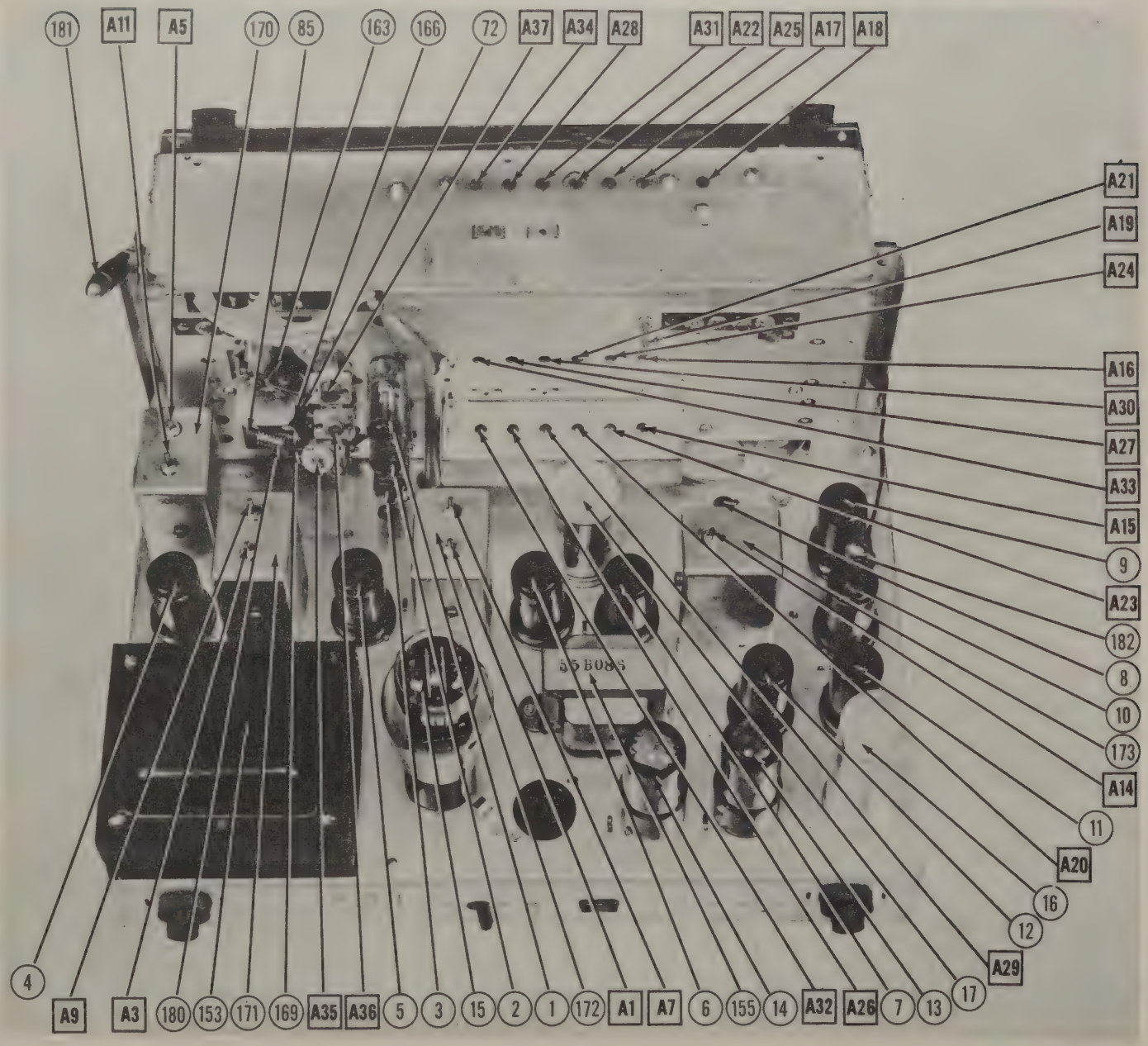
SET #22 DATE 8/47 FOLDER #4712-14

CHASSIS—TOP VIEW



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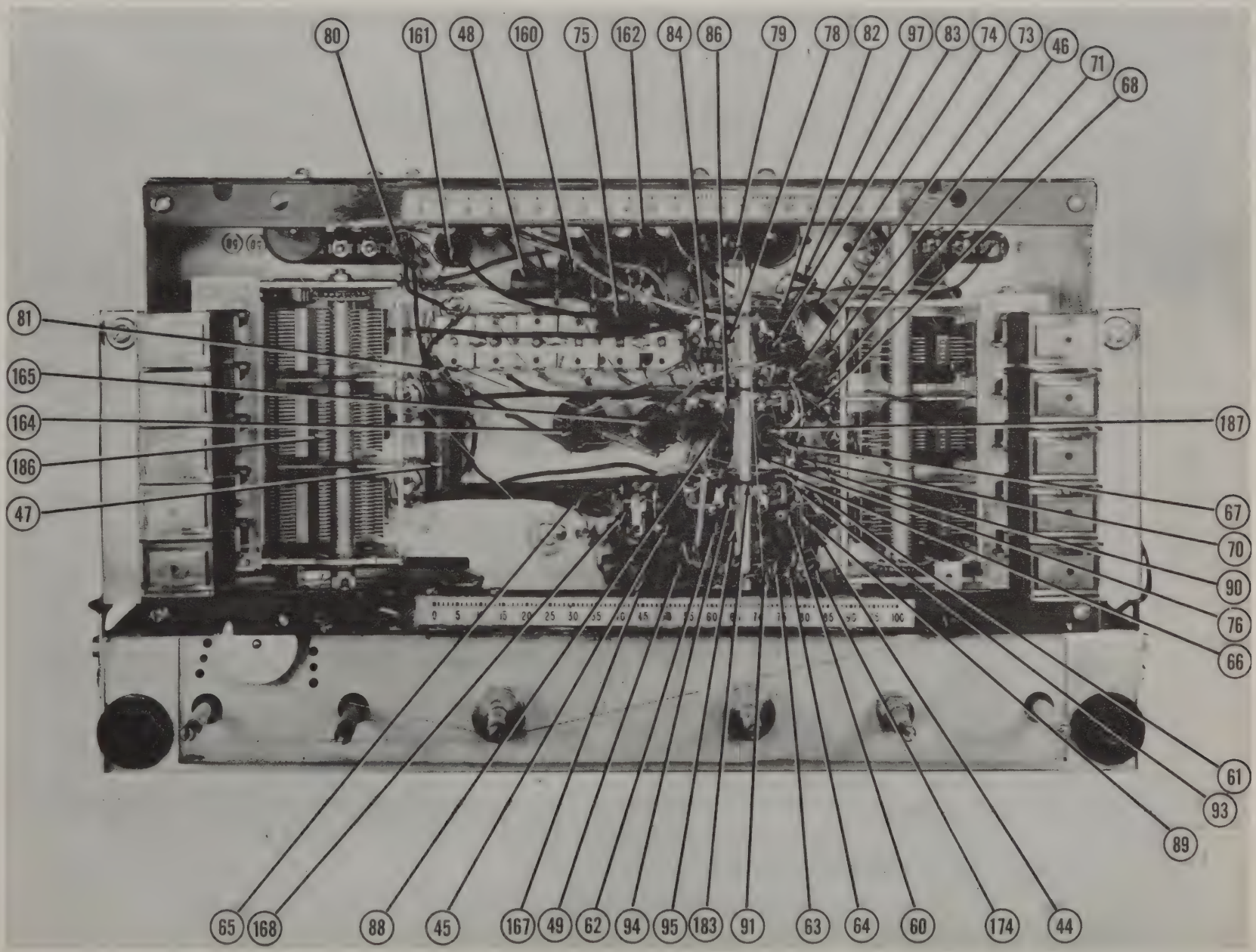
CHASSIS—TOP VIEW



ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use scales on dial pointer rails for calibration purposes. These are accessible after dial backplate has been removed. With tuning cap fully closed set right edges of dial pointer saddles to "0" on both scales.

Standard RMA dummy antenna consists of 200 MMFD cap. in series with a 20 M.H. RF Choke which is shunted by a 400 MMFD cap. in series with a 400Ω carbon resistor.

Set bass control to #1 position (first position clockwise from "off" position) and treble control to #4 position (fully clockwise). Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for aligning.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to Pin 4 (grid) 6SG7 2nd IF Tube (5). Low side to chassis.	455KC	BC (3 positions clockwise from fully counter clockwise)	AM calibration strip #55	Across voice coil	A1,A2,	Adjust for maximum output.
2	.01 MFD	High side to Pin 4 (grid) 6SG7 1st IF Tube (4). Low side to chassis.	"	"	"	"	A3,A4.	" " " "
3	.01 MFD	High side to Pin 7 (grid) 6BE6. Low side to chassis.	"	"	"	"	A5,A6.	" " " "
4	.01 MFD	High side to Pin 4 (grid) 6SG7 2nd IF Tube (5). Low side to chassis.	10.7MC	FM (1 position counter clockwise from fully clockwise)	"	VTVM from junction of resistor 101 and cap. 30 to chassis.	A7,A8.	Set bass control to #1, treble control to #4. Adjust for maximum deflection.
5	.01 MFD.	High side to Pin 4 (grid) 6SG7 1st IF Tube (4). Low side to chassis.	"	"	"	"	A9,A10	"
6	.01 MFD.	High side to Pin 7 (grid) 6BE6. Low side to chassis.	"	"	"	"	A11,A12	"
7	.01 MFD	High side to Pin 4 (grid) 6SG7 2nd IF Tube (5). Low side to chassis.	"	"	"	VTVM to Pin 7 of 6AL5 and chassis.	A13	Adjust for maximum deflection.
8	.01 MFD	"	"	"	"	VTVM to Pin 3 of FM Detector Transformer (173) and chassis.	A14	Adjust for zero volts.
9	RMA Dummy	High side to "A" terminal. Low side to "B" terminal on ant. term. board.	1500KC	BC	AM calibration strip #82.	Across voice coil	A15	Adjust for maximum output.
10	"	"	"	"	Tune for maximum output.	"	A16.A17	" " " "
11	"	"	600KC	"	AM calibration strip #15.5.	"	A18	" " " "
12	"	"	"	"	Tune for maximum output.	"	A19	" " " "
13	"	"	12MC	SW B (1 position clockwise from fully counter clockwise)	AM calibration strip #91.5.	"	A20	" " " "
14	"	"	"	"	Tune for maximum output.	"	A21,A22	" " " "
15	"	"	9MC	"	AM calibration strip #6.5.	"	A23	" " " "
16	"	"	"	"	Tune for maximum output.	"	A24,A25	" " " "
17	"	"	18MC	SW A (fully counter clockwise)	AM calibration strip #94.5.	"	A26	" " " "
18	"	"	"	"	Tune for maximum output.	"	A27,A28	" " " "
19	"	"	15MC	"	AM calibration strip #7.5.	"	A29	" " " "
20	"	"	"	"	Tune for maximum output.	"	A30,A31	" " " "
21	"	"	16MC	SW C (2 positions clockwise from fully counter clockwise)	AM calibration strip #84.	"	A32	" " " "
22	"	"	"	"	Tune for maximum output.	"	A33,A34	" " " "
23	150Ω in series with each lead.	Connected across "D" terminals of the FM Ant. terminal strip.	108MC	FM (1 position counter clockwise from fully clockwise)	FM calibration strip #83.5.	VTVM connected same as in Step 4.	A35,A36 A37.	Adjust for maximum deflection in order given.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	[illegible]	7BZ	
2	Mixer	6BE6	6BE6	7CH	AM Oscillator
3	Osc.-AFC	6J6	6J6	7BF	High Freq. Oscillator
4	1st IF Amp.	6SG7	6SG7	8BK	
5	2nd IF Amp.	6SG7	6SG7	8BK	
6	FM 3rd IF-AM Det.-AVC	6SG7	6SG7	8BK	
7	FM 4th IF Amp.	6SH7or 6SG7	6SH7 or 6SG7	[illegible]	
8	FM Det.	6AL5	6AL5	6AT	
9	1st AF Amp.	6J5	6J5	6C	
10	2nd AF Amp.	6J5	6J5	6C	
11	3rd AF Amp.	6SQ7	6SQ7	8C	
12	Phase Inv.	6SQ7	6SQ7	8C	
13	Power Output	6V6GT	6V6GT	7AC	
14	Power Output	6V6GT	6V6GT	7AC	
15	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ECHOPHONE PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
16A	60	450	45B099	UP9DJ534		DY-315	EL-330		■ Filter
B	20	450				M-20-450	UT-20		▲ "
C	20	30							Cath. Bypass
17A	40	450	45B100	UP9DJ531	FP346	DY-315	EL-424	AF86J4A1	■ Filter
B	10	450							▲ "
C	20	30							Cath. Bypass
18	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Line Bypass
19	.05	600	46AY503F	DT6S5	TP415	S-6-05	TC-15	684-05	Audio Coupling
20	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	" "
21	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	RF Bypass Pwr. Supp.
22	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	Tone Compensation
23	.05	600	46AY503F	DT6S5	TP415	S-6-05	TC-15	684-05	Audio Coupling
24	.1	200	[illegible]	DT4P1	TP412	S-4-1	TC-1	[illegible]	Tone Compensation
25	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
26	.003	600	46AZ302J	DT6D3	TP406	S-6-003	TC-23	684-003	Audio Coupling
27	.05	600	46AY503F	DT6S5	TP415	S-6-05	TC-15	684-05	Ratio Det. Bias
28	.05	600	46AY503F	DT6S5	TP415	S-6-05	TC-15	684-05	" " "
29	.05	600	46AY503F	DT6S5	TP415	S-6-05	TC-15	684-05	4th IF Screen Bypass
30	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	AVC Filter
31	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Tone Compensation
32	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	" "
33	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	3rd IF Screen Bypass
34	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	3rd IF Plate Decoup.
35	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	3rd IF Cath. Bypass
36	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	2nd IF Screen Bypass
37	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	2nd IF Plate Decoup.
38	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	2nd IF Cath. Bypass
39	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	2nd IF Grid Filter
40	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	1st IF Plate Decoup.
41	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	1st IF Screen Bypass
42	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	AVC Filter
43	.02	600	46AV203F	DT6S2	TP412	S-6-02	TC-12	684-02	Mixer Plate Decoup.
44	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	" " "
45	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	Mixer Screen Bypass
46	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	RF Plate Decoup.
47	.05	600	46AY503F	DT6S5	TP415	S-6-05	TC-15	684-05	AVC Filter
48	.02	600	46AV203F	DT6S2	TP412	S-6-02	TC-12	684-02	" "
49	.02	600	46AV203F	DT6S2	TP412	S-6-02	TC-12	684-02	AFC Filter
50	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	Filament Bypass
51	.01	600	46AZ103F	DT6S1	TP410	S-6-01	TC-11	684-01	" "
52	220	500	CM20A221M	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Output Grid Filter
53	330	500	CM20A331M	5W5T3	MC241	MO.5-333	1FM-335	1468-00035	Tone Compensation
54	22	500	CM20A220M	5W5Q25	MC220	MO.5-422	MS-425	1468-000025	" "
55	100	500	CM20A101M	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Filter
56	1000	500	CM30A102M	1W5D1	MC255	MW.5-21	1FM-21	1468-001	De-emphasis
57	47	500	CM20A470M	5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	IF Coupling
58	220	500	CM20A221M	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Diode Filter
59	220	500	CM20A221M	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	" "

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ECHOPHONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
116	150Ω	½	RC20AE151M	BW-½-150	Br.-Grn.-Br. AFC Cathode
117	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. 4th IF Grid
118	100KΩ	1		BTA-100K	Br.-Blk.-Yl. 4th IF Screen Dropping
119	10KΩ	½	RC20AE103M	BTS-10K	Br.-Blk.-Or. De-Emphasis
120	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. Ratio Detector Network
121	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. " " "
122	33Ω	½	RC20AE330M	BW-½-33	Or.-Or.-Blk. Feedback
123	1KΩ	½	RC20AE102M	BTS-1K	Br.-Blk.-Red "
124	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Load
125	220KΩ	½	[illegible]	BTS-220K	Red-Red-Yl. 2nd AF Grid
126	4700Ω	½	RC20AE472M	BTS-4700	Yl.-Vi.-Red 2nd AF Plate Load
127	3300Ω	½	RC20AE332M	BTS-3300	Or.-Or.-Red 2nd AF Plate Load
128	33KΩ	½	RC20AE333M	BTS-33K	Or.-Or.-Or. Tone Compensation
129	22KΩ	½	RC20AE223M	BTS-22K	Red-Red-Or. "
130	390KΩ	½		BTS-390K	Or.-White-Yl. 3rd AF Grid
131	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. 3rd AF Grid
132	33Ω	½	RC20AE330M	BW-½-33	Or.-Or.-Blk. Feedback
133	220Ω	½	RC20AE221M	BW-½-220	Red-Red-Br. 3rd AF Cathode
134	470Ω	½	RC20AE471M	BTS-470	Yl.-Vi.-Br. 1st and 2nd AF Cathode
135	22KΩ	2	RC40AE223K	BT-2-22K	Red-Red-Or. Filter
136	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. 3rd AF Plate Load
137	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. Phase Inverter Grid
138	3900Ω	½	RC20AE392K	BTS-3900	Or.-White-Red Phase Inverter Cathode
139	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl. Phase Inverter Plate Load
140	330KΩ	½	RC20AE334M	BTS-330K	Or.-Or.-Yl. Output Grid
141	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. "
142	330Ω	5	24A864	AB-350	Output Cathode-See Note 2
143	470Ω	½	RC20AE471M	BTS-470	Yl.-Vi.-Br. Feedback
144	330Ω	5	24A764	AB-350	Filter
145	68KΩ	½	RC20AE683M	BTS-68K	Blue-Gray-Or. Tone Compensation
146	10KΩ	½	RC20AE103M	BTS-10K	Br.-Blk.-Or. Tone Compensation
147	820Ω	½	RC20AE821K	BTS-820	Gray-Red-Br. Tone Compensation
148	330KΩ	½	RC20AE334	BTS-330K	Or.-Or.-Yl. Phono Shunt
149	47Ω	4		AB-50	Bias - See Note 1
150	330Ω	10	24BG331E	AB-350	Filter
151	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl. Diode Load
152	33KΩ	½	RC20AE333M	BTS-33K	Or.-Or.-Or. Tone Compensation

Note 1 - X and XX series use 200Ω SW resistor in this application. IRC replacement AB-200.
Note 2 - On IRC replacement set slider at 330Ω from one end.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ECHOPHONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.
153	117V AC @ 1.27A	800V CT @ .160A	5.1V AC @ 3.0A	6.3V AC @ 5.6A	[illegible]C132	P-6165	T22R07

CHOKE (TONE)

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA: ECHOPHONE PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
154	.0045A	650Ω	12.5Henries	56B032			

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ECHOPHONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	INSTALLATION NOTES
155	10,000Ω CT	3.6Ω tapped @3.5Ω	400Ω CT	.7Ω tapped @ .4Ω	55B036	A-3831 §	T22S56	§ Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA: ECHOPHONE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
156A	FIELD PM; VC IMP. @.6Ω	65C045			Used in Model EC-40 only.
157A	CONE DIA. 14¼"; VC DIA. 1¼"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ECHOPHONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
60	10		47A14[illegible]						AFC Coupling Cer.
61	1000		47A148						AFC Cath. Bypass Cer.
62	47	500	CM20A470M	5W5Q5	MC22[illegible]	MO.5-447	1FM-45	1468-00005	AFC Filter
63	500		47A147						Osc. Coupling Cer.
64	1000		47A148						Osc. Feedback Cer.
65	3900	500	CM35A392J						Fixed Padder Cer.
66	47		47A150						FM Osc. Grid Cer.
67	10	500	CM20A100K	5W5Q1	MC215	MO.5-41	MS-41	1468-00001	Mixer Plate Bypass
68	1000		47A148						Mixer Screen Bypass
69	39		CC[illegible]H390M						Fixed Padder Cer.
70	47		47A150						Osc. Coupling Cer.
71	500		47A147						FM RF Plate Decoup. Cer.
72	22	500	CM20A220K			MO.5-422			Fixed Trimmer
73	1000		47A148						RF Screen Bypass Cer.
74	47	500	CM20A470M	5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	FM RF Coupling
75	100	500	CM20A101M	5W5T1	MC235	MO.5-31	1FM-71	1468-0001	RF Coupling
76	1000		47A148						Filament Bypass Cer.

†Do not use one section.
‡Parallel sections for desired capacity.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ECHOPHONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
77A	2 Meg.	1.	25A571	MK403	D1B-139	AM-66-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	RSS-3	Attach to 77A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ECHOPHONE PART No.	IRC PART No.	IDENTIFICATION CODES
78	1 Meg.	½	RC20AR105M	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
79	1 Meg.	½	RC20AR105M	BTS-1 Meg.	Br.-Blk.-Grn. AFC Network
80	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. AVC Network
81	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. AVC Network
82	100Ω	½	RC20AE101M	BW-½-100	Br.-Blk.-Br. RF Cathode
83	33KΩ	1	RC30AE333M	BTA-33K	Or.-Or.-Or. RF Screen Dropping
84	1KΩ	½	RC20AE102M	BTS-1K	Br.-Blk.-Red Decoupling
85	10Ω	½	RC20AE100M	BW-½-10	Br.-Blk.-Blk. Parasitic Suppressor
86	1 Meg.	½	RC20AR105M	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
87	22KΩ	2	RC40AE223K	BT-2-22K	Red-Red-Or. Converter Screen Dropping
88	10Ω	½	RC20AE100M	BW-½-10	Br.-Blk.-Blk. Parasitic Suppressor
89	1KΩ	½	RC20AE102M	BTS-1K	Br.-Blk.-Red Decoupling
90	22KΩ	½	RC20AE223M	BTS-22K	Red-Red-Or. AM Oscillator Grid
91	1KΩ	½	RC20AE102M	BTS-1K	Br.-Blk.-Red Converter Plate Decoupling
92	220Ω	½	RC20AE221M	BW-½-220	Red-Red-Br. Parasitic Suppressor
93	22KΩ	½	RC20AE223M	BTS-22K	Red-Red-Or. FM Oscillator Grid
94	220Ω	½	RC20AE221M	BW-½-220K	Red-Red-Yl. Parasitic Suppressor
95	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. AFC Network
96	10KΩ	2	RC40AE103M	BTS-10K	Br.-Blk.-Or. Voltage Dropping
97	2200Ω	½	RC20AE222M	BTS-2200	Red-Red-Red Antenna Loading
98	47KΩ	1	RC30AE473M	BTA-47K	Yl.-Vi.-Or. 1st IF Screen Dropping
99	1KΩ	½	RC20AE102M	BTS-1K	Br.-Blk.-Red Decoupling
100	68KΩ	½	RC20AE683M	BTS-68K	Blue-Gray-Or. AVC Network
101	1 Meg.	½	RC20AR105M	BTS-1 Meg.	Br.-Blk.-Grn. " "
102	330KΩ	½	RC20AE334M	BTS-330KΩ	Or.-Or.-Yl. Diode Load
103	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. Tone Compensation
104	1 Meg.	½	RC20AR105M	BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
105	1 Meg.	½	RC20AR105M	BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
106	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl. AVC Network
107	220Ω	½	RC20AE221M	BW-½-220	Red-Red-Br. 2nd IF Cathode
108	47KΩ	1	RC30AE473M	BTA-47K	Yl.-Vi.-Or. 2nd IF Screen Dropping
109	1KΩ	½	RC20AE102M	BTS-1K	Br.-Blk.-Red 2nd IF Plate Decoupling
110	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
111	220Ω	½	RC20AE221M	BW-½-220	Red-Red-Br. 3rd IF Cathode
112	47KΩ	1	RC30AE473M	BTA-47K	Yl.-Vi.-Or. 3rd IF Screen Dropping
113	3300Ω	½	RC20AE332M	BTS-3300	Or.-Or.-Red 3rd IF Plate Load
114	10KΩ	2	RC40AE103M	BT-2-10K	Br.-Blk.-Or. Voltage Dropping
115	10KΩ	2	RC40AE103M	BT-2-10K	Br.-Blk.-Or. Voltage Dropping

PARTS LIST AND DESCRIPTIONS (Continued)

156B	FIELD PM	VC IMP. 7.0Ω	85C054	ST-120 Mod. P10-S		Used in Model EC-404 only. Alternate Speaker 85C043.
157B	CONE DIA. 9-3/8"	VC DIA. 7/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
156C	FIELD PM	VC IMP. 7.0Ω	85C055	ST-120 Mod. P10-S		Used in Model EC-404 only Alternate Speaker 85C047
157C	CONE DIA. 9-3/8"	VC DIA. 7/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

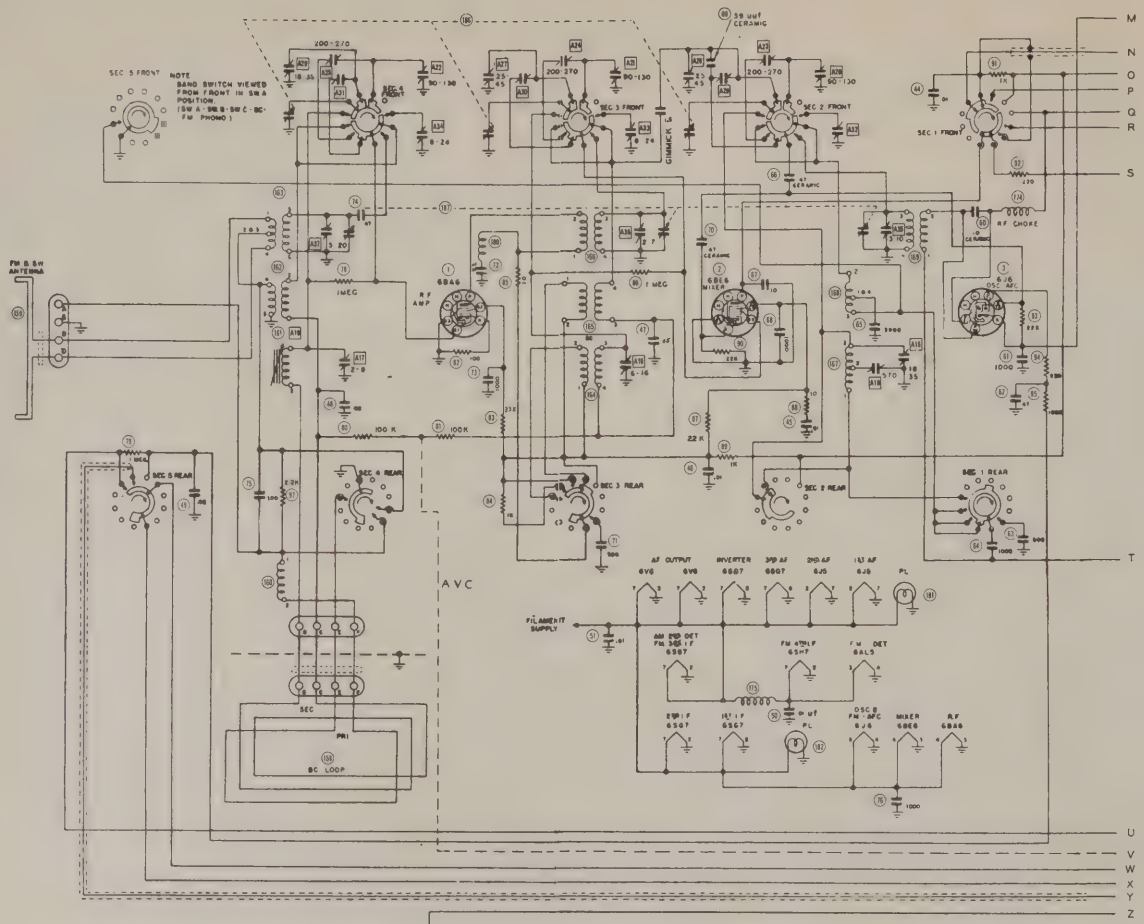
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ECHOPHONE PART No.	REPLACEMENT DATA MEISSNER PART No.	
158	Loop Ant.	0Ω	.5Ω	57D1[illegible]		
159	Dipole Ant.			47C1[illegible]		
160	Loop Loading Coil		13Ω	45C[illegible]7		
161	BC Ant.Loading Coil		6Ω	51B906		
162	SW Ant.Coil	.5Ω	0Ω	51B909	14-1044	
163	FM Ant. Coil	0Ω	0Ω	51B916		
164	BC RF Coil	24Ω	7.5Ω	51B910	14-1027	
165	SW RF Coil	8Ω	0Ω	51B905	14-1045	
166	FM RF Coil	0Ω	0Ω	51B915		
167	BC Osc. Coil		6Ω	51B911	14-1040	
168	SW Osc. Coil	.3Ω	0Ω	51B90[illegible]		
169	FM Osc. Coil	0Ω	0Ω	51B914		
170A	Input IF (AM)	5Ω	5.8Ω*	50C210		Items 170A & 170B in same can.
B	" " (FM)	.1Ω				
171A	Inter.IF (AM)	6Ω#	6Ω*	50C209		" 171A & 171B " " "
B	" " (FM)					
172A	Inter.IF (AM)	6Ω#	6Ω*	50C[illegible]		" 172A & 172B " " "
B	" " (FM)					
173	FM Detector	2.5Ω	2Ω	50C208		
174	HF Osc. Plate Choke		2Ω	53B[illegible]		
175	Fil. Choke		.2Ω	53B009		
176	RF Choke		12Ω	53A106		
177	" "		12Ω	53A106		
178	" "		12Ω	53A106		*includes both sec.
179	" "		12Ω	53A106		# " " pri.
180	" "		0Ω	53A11[illegible]		

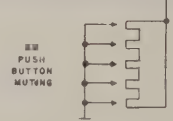
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ECHOPHONE PART No.		INSTALLATION NOTES
181	Bayonet	6-8	0.25	Blue			Type 44
182	"	"	"	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	ECHOPHONE PART No.	NOTES
183	Bandswitch	60C268	5 Sec.-6 Position
184	Tone Switch	60B265	Bass-On-Off
185	Treble Tone Sw.	60B264	
186	AM Tuning Cap.	48C176	13-486 MMF-Each section
187	FM Tuning Cap.	48C175	11-42 MMF-Each section
A15	Trimmer Strip	44B195	BC Osc. Adj.
A20			SW "B" Osc. Adj.
A23			SW "B" Osc. Padder
A26			SW "A" Osc. Adj.
A29			SW "A" Osc. Padder
A32			SW "C" Osc. Adj.
A16	Trimmer Strip	44B196	BC RF Adj.
A21			SW "B" RF Adj.
A24			SW "B" RF Padder
A27			SW "A" RF Adj.
A30			SW "A" RF Padder
A33			SW "C" RF Adj.
A17	Trimmer Strip	44B190	BC Ant. Adj.
A22			SW "B" Ant. Adj.
A25			SW "B" Ant. Padder
A28			SW "A" Ant. Adj.
A31			SW "A" Ant. Padder
A34			SW "C" Ant. Adj.
A18	Trimmer	44A189	BC Osc. Padder
A35	"	44A193	FM Osc. Adj.
A36	"	44A192	FM RF Adj.
A37	"	44A194	FM Ant. Adj.





IF=455KC AM

IF=10.7MC FM

STAGE GAIN MEASUREMENTS

ANTENNA TO RF GRID	1.6X	600KC
RF GRID TO CONVERTER GIRD	2.6X	600KD
CONVERTER GAIN	7X	IN 600KC OUT 455KC
1st IF TRANSFORMER	.7X	455KC
1st IF TUBE	18X	455KC
2nd IF TRANSFORMER	.56X	455KC
2nd IF TUBE	150X	455KC
3rd IF TRANSFORMER	2.8X	455KC
1st AUDIO	20X	400 ~
2nd AUDIO	9X	400 ~
3rd AUDIO	50X	400 ~
OUTPUT	14X	400 ~

* READINGS TAKEN IN FM POSITION

VOLTAGE & RESISTANCE TAKEN IN BROADCAST POSITION

VOLTAGE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	6BA6	-4V.DC	0V.	0V.	6.3V.AC	315V.DC	150V.DC	1.7V.DC	
2	6BE6	-5V.DC	0V.	0V.	6.3V.AC	340V.DC	105V.DC	-4V.DC	
3	6J6	200V.DC	*130V.DC	0V.	6.3V.AC	* 0V.	-12V.DC	2V.DC	
4	6SG7	0V.	0V.	0V.	-.7V.DC	0V.	130V.DC	6.3V.AC	335V.DC
5	6SG7	0V.	0V.	3V.DC	0V.	3V. DC	170V.DC	6.3V.AC	335V.DC
6	6SG7	0V.	0V.	0V.	-.5V. DC	0V.	.8V.DC	6.3V.AC	1.5V.DC
*6	6SG7	0V.	0V.	2.5V.DC	0V.	2.5V.DC	150V.DC	6.3V.AC	280V.DC
*7	6SH7	0V.	0V.	0V.	-4V.DC	0V.	42V.DC	6.3V.AC	40 V.DC
*8	6AL6	0V.	0V.	6.3V.AC	0V.	.75V.DC	0V.	-8V.DC	
9	6J5	0V.	6.3V.AC	92V.DC	175V.DC	0V.	155V.DC	0V.	4V.DC
10	6J5	0V.	6.3V.AC	143V.DC	160V.DC	0V.	0V.	0V.	4V.DC
11	6SQ7	0V.	0V.	1.4V. DC	0V.	0V.	133V.DC	6.3V.AC	0V.
12	6SQ7	0V.	0V.	2.1V.DC	0V.	0V.	215V.DC	6.3V.AC	0V.
13	6V6GT	0V.	0V.	365V.DC	340V.DC	0V.	0V.	6.3V.AC	23V.DC
14	6V6GT	0V.	0V.	365V.DC	340V.DC	0V.	0V.	6.3V.AC	23V.DC
15	5U4G	0V.	420V.DC	0V.	400 V.AC	0V.	400 V.AC	0V.	420V.DC

RESISTANCE READINGS

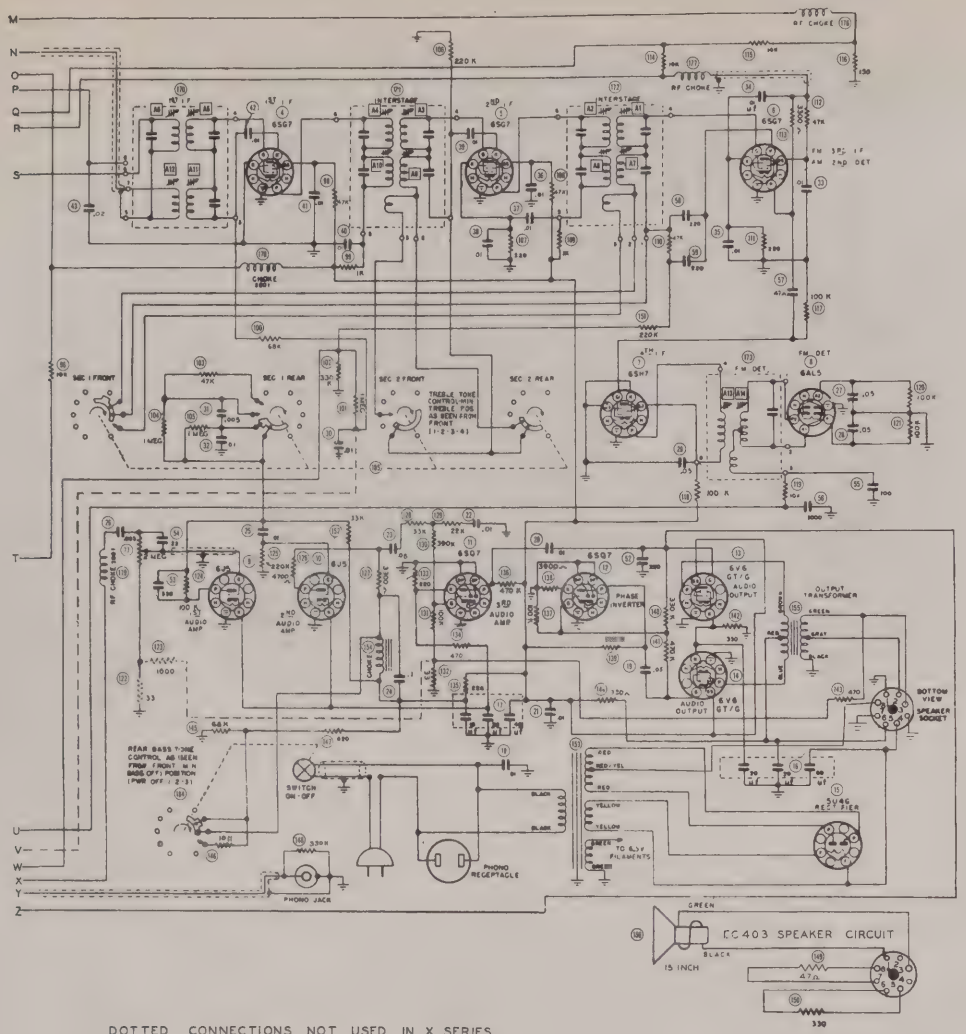
ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	6BA6	1.4MEG.	0Ω	0Ω	.1Ω	50 KΩ	80 KΩ	85Ω	
2	6BE6	20 KΩ	0Ω	0Ω	.1Ω	50 KΩ	70 KΩ	1.4 MEG.	
3	6J6	60 KΩ	10 KΩ	0Ω	.1Ω	INF.	20 KΩ	150Ω	
4	6SG7	0Ω	0Ω	0Ω	1.3MEG.	0Ω	97 KΩ	.1Ω	50 KΩ
5	6SG7	0Ω	0Ω	210Ω	230KΩ	210Ω	97 KΩ	.1Ω	50 KΩ
6	6SG7	0Ω	0Ω	200Ω	550 KΩ	200Ω	67 KΩ	.1Ω	23 KΩ
*6	6SG7	0Ω	0Ω	200Ω	500 KΩ	200Ω	67 KΩ	.1Ω	23KΩ
*7	6SH7	0Ω	0Ω	0Ω	95 KΩ	0Ω	150KΩ	.1Ω	150 KΩ
*8	6AL5	INF.	INF.	.1Ω	0Ω	100 KΩ	0Ω	100 KΩ	
9	6J5	0Ω	.1Ω	200KΩ	35 KΩ	2 MEG.	100 KΩ	0Ω	700Ω
10	6J5	0Ω	.1Ω	80 KΩ	75 KΩ	200 KΩ	INF.	0Ω	700Ω
11	6SQ7	0Ω	90 KΩ	230Ω	0Ω	0Ω	520 KΩ	.1Ω	0Ω
12	6SQ7	0Ω	100 KΩ	4KΩ	0Ω	0Ω	270 KΩ	.1Ω	0Ω
13	6V6GT	0Ω	0Ω	50 KΩ	50 KΩ	440 KΩ	100 KΩ	.1Ω	300Ω
14	6V6GT	0Ω	0Ω	50 KΩ	50 KΩ	520 KΩ	INF.	INF.	300Ω
15	5U4G	INF.	50 KΩ	INF.	240Ω	INF.	240Ω	.1Ω	50 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

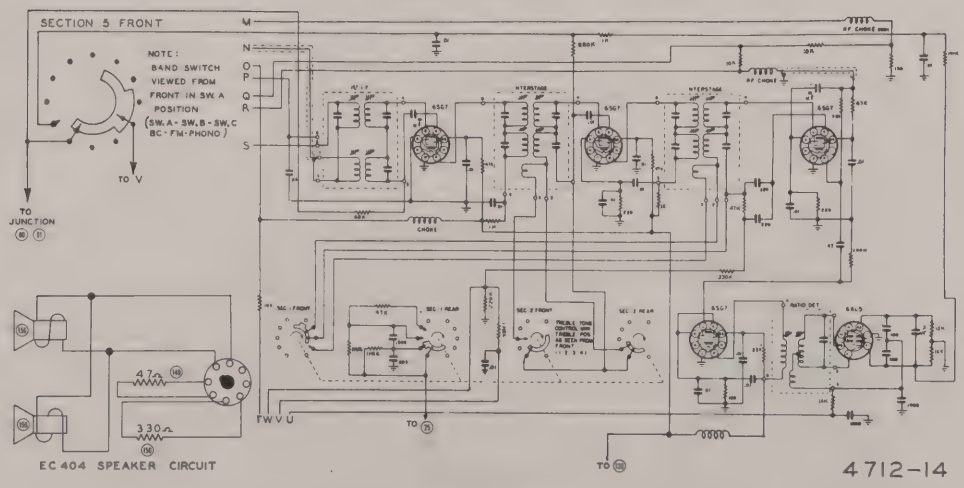
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4712-14

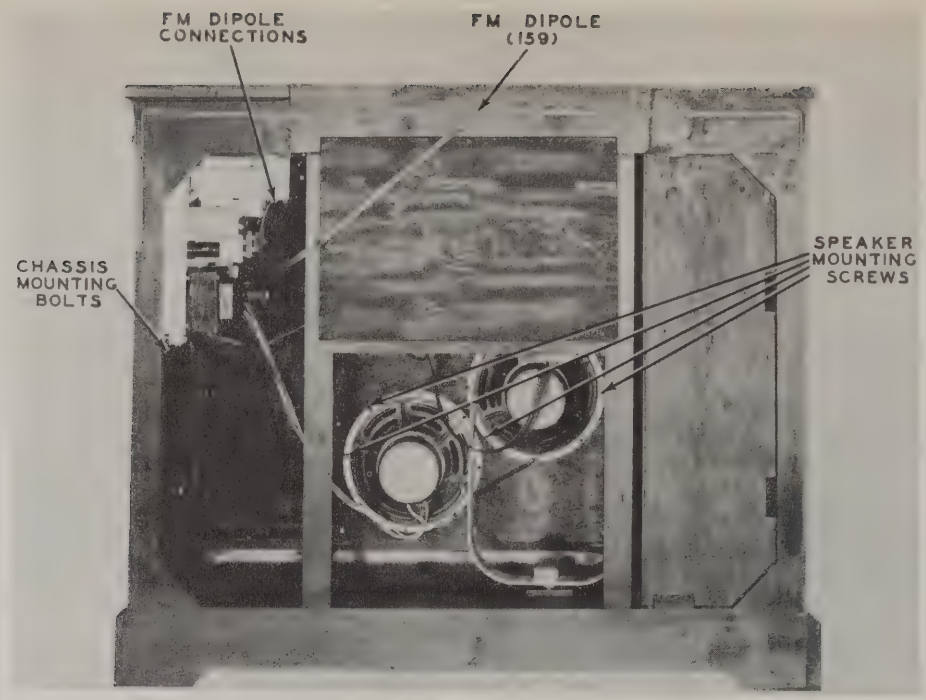
1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**



ALTERNATE CIRCUIT FOR X SERIES

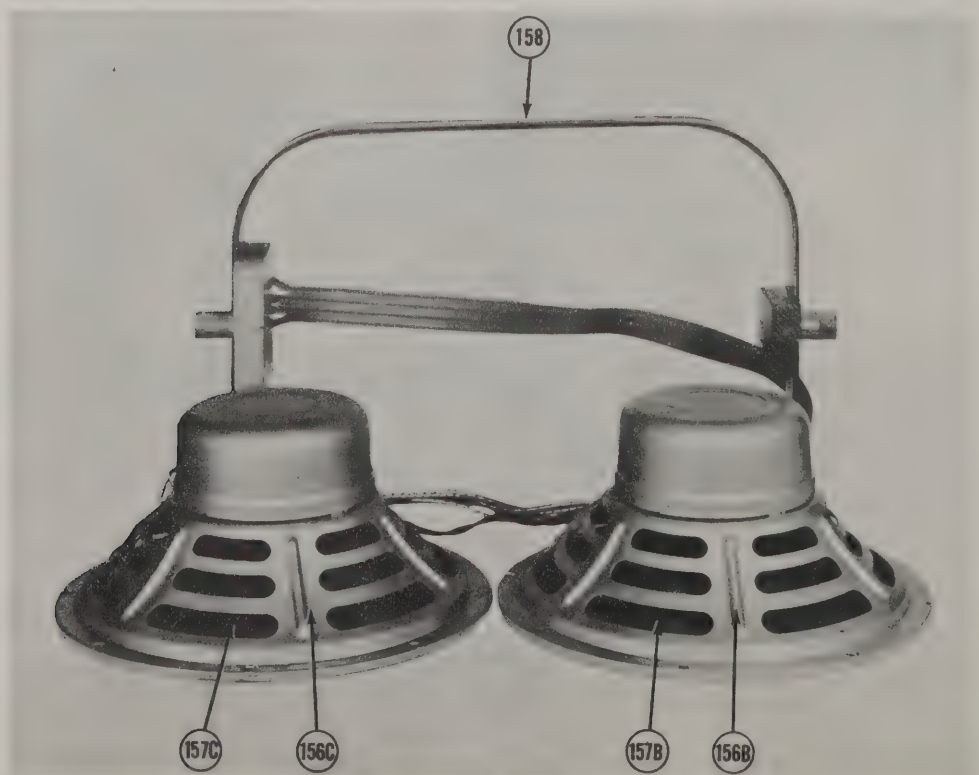


The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



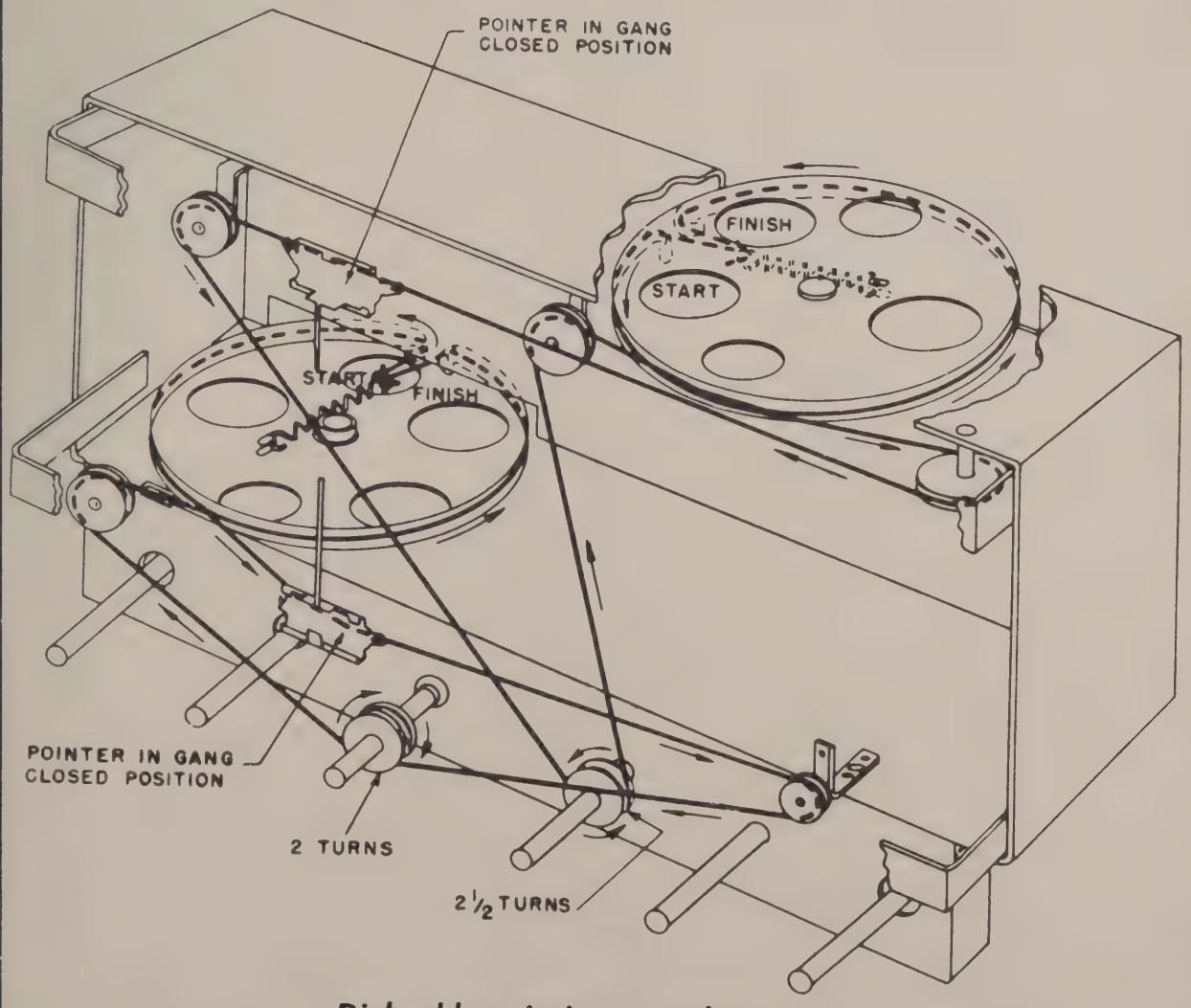
DISASSEMBLY INSTRUCTIONS

1. Remove six push on type control knobs.
2. Remove phono-motor plug from chassis.
3. Remove phono-pickup plug from chassis.
4. Remove FM antenna leads from chassis.
5. Remove loop antenna leads from chassis.
6. Remove speaker plug from chassis.
7. Remove foil ground strap from chassis.
8. Remove two bolts and four Phillips head screws from clamps holding chassis in cabinet. Remove chassis from cabinet.
9. Remove wood screws holding speakers in cabinet. Remove speakers from cabinet.



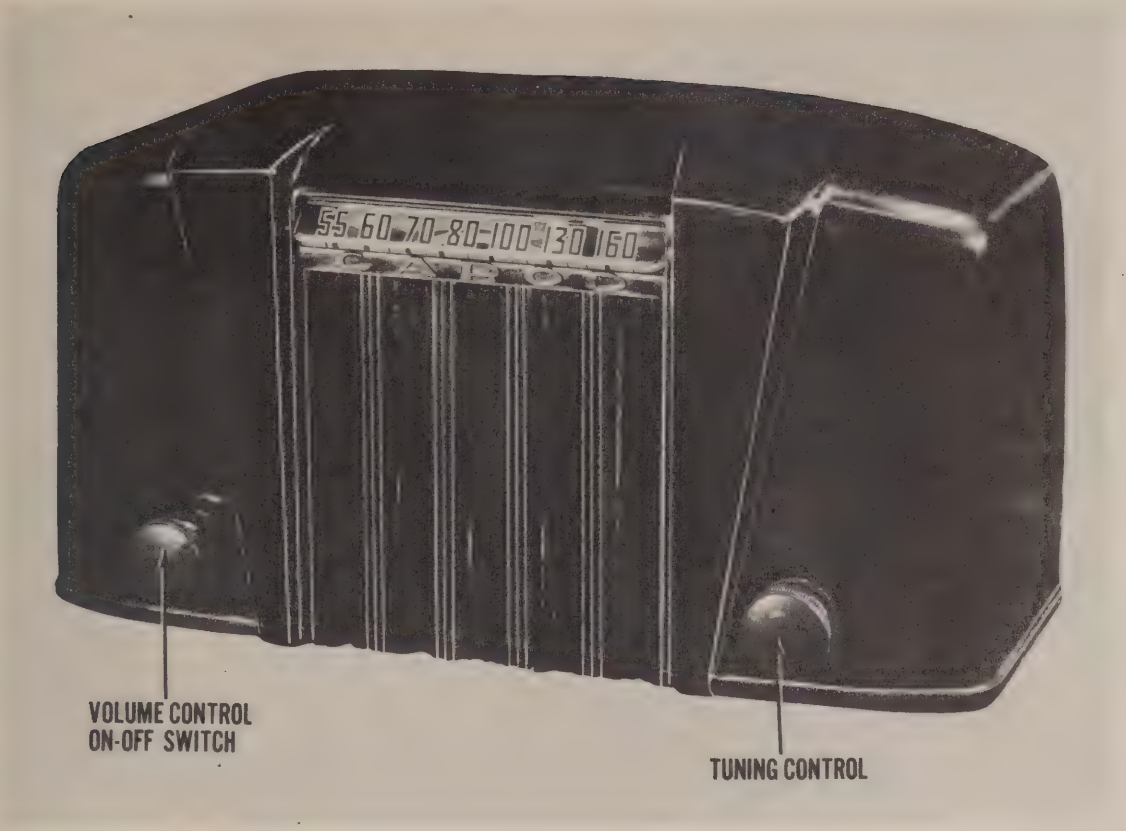
PUSHBUTTON ADJUSTMENTS

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Remove translucent inserts by pulling straight out.
3. AM pushbuttons are at low frequency end of dial. FM pushbuttons are at high frequency end.
4. Loosen buttonsset screws about one half turn.
5. Push any AM button in completely and hold.
6. Manually tune in desired station.
7. Holding button in, tighten set screw firmly.
8. Check accuracy of setting by detuning with manual tuning control and retuning with pushbutton. If setting is off, repeat Steps 4, 5, 6, and 7.
9. Replace translucent insert.
10. To set up the remaining AM buttons follow the same procedure as outlined above.
11. Follow same procedure for setting FM pushbuttons.



Dial cable stringing procedure.

GAROD
MODEL 5A-1



GAROD
MODEL 5A-1

GAROD MODEL 5A1

TRADE NAME	Garod, Model 5A1
MANUFACTURER	Garod Radio Corp., 70 Washington St., Brooklyn, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1650KC RATING .250 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD. capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		GAROD PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	GAROD PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	20	150	5.415-2	EZ42215	TN129	DSB-3x20-150	TA-303	PRSA150-20-20	Filter - Blue
B	20	150						"	" - Red
C	20	150						PRS150-20	" - Green
7	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
8	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
9	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
10	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	" "
11	.02	200		DT4S2	TP423	S-4-02	TC-12	484-02	AVC Filter
12	220	500		5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Audio Plate Bypass
13	220	500		5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Diode Filter

CONTROLS

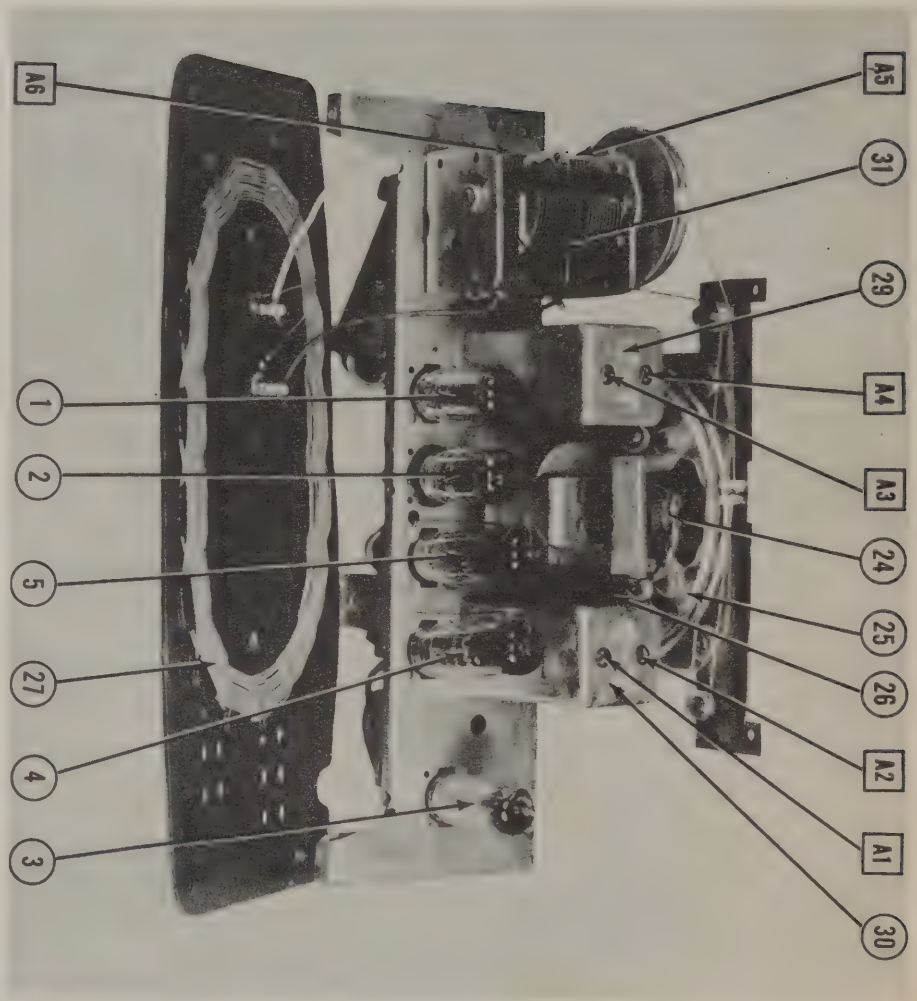
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	GAROD PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
14A	1 Meg.	1	8.200-9	MK4C2	D13-137	AM-63-2	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 14A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GAROD PART No.	IRC PART No.	
15	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
16	220Ω	½		BW-½-220	Red-Red-Br. IF Cathode-See Note
17	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
18	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
19	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
20	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
21	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
22	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
23	100Ω	½		BW-½-100	Br.-Blk.-Br. Filter

Note-Some models use 330Ω in this application. IRC replacement BW-½-330.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GAROD PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
24	1800Ω	3.3Ω	140Ω	.7Ω	Part of 30.303	A-3876	T22S45		

SPEAKER

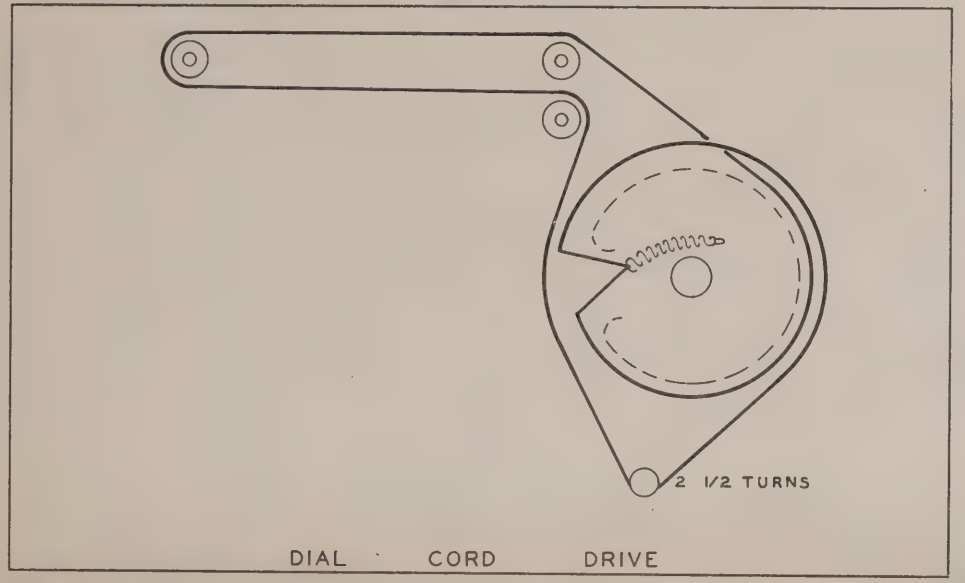
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GAROD PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
25	PM	3.3Ω	30.303			
	CONE DIA.	VC DIA.				
26	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	GAROD PART No.	MEISSNER PART No.	
27	Loop Ant.		3Ω	1.443		
28	Osc. Coil		7.5Ω	1.444-1	14-1040	Add 50MMFD from grid to high side tuning cap.
29	Input IF	43Ω	42Ω	1.259	16-6658	
30	Output IF	43Ω	42Ω	1.259	16-6660	

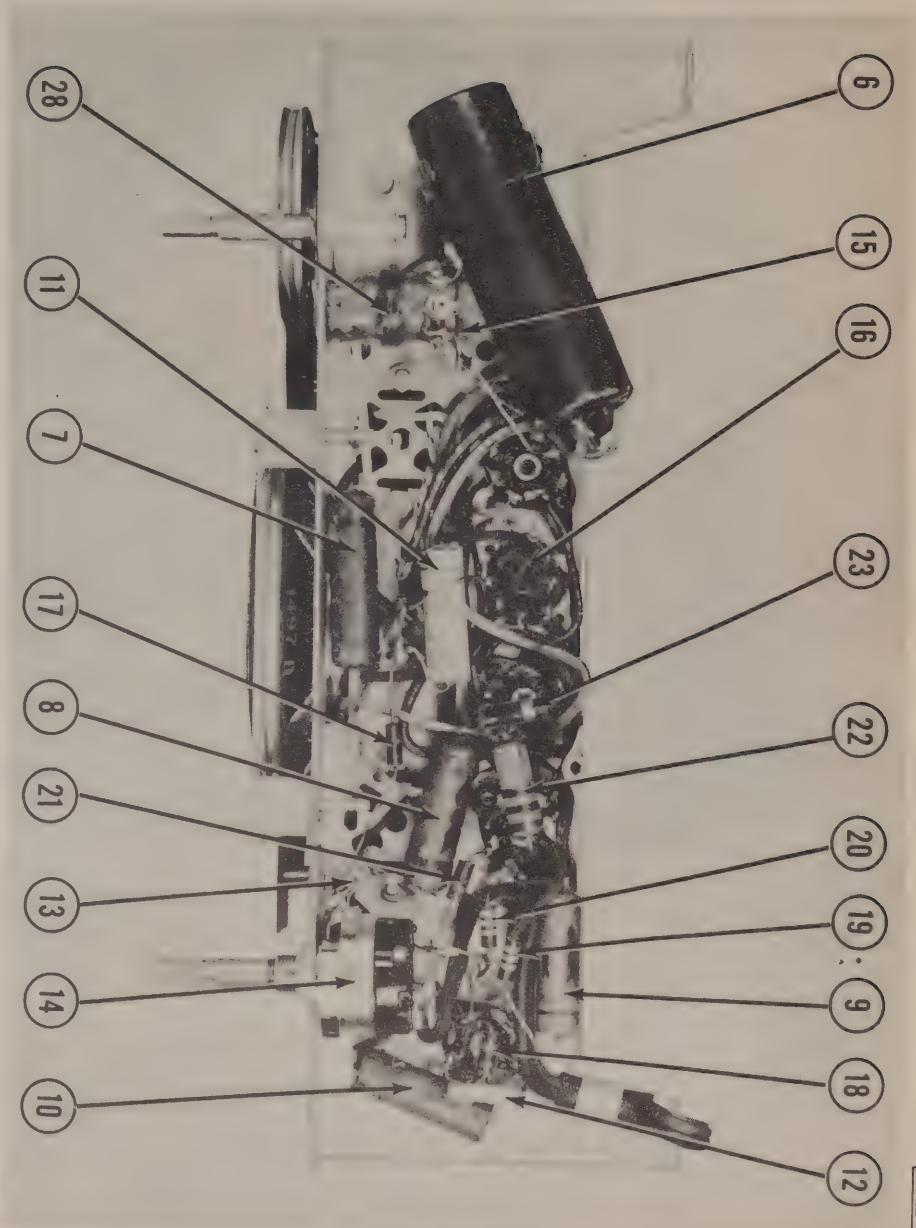
MISCELLANEOUS

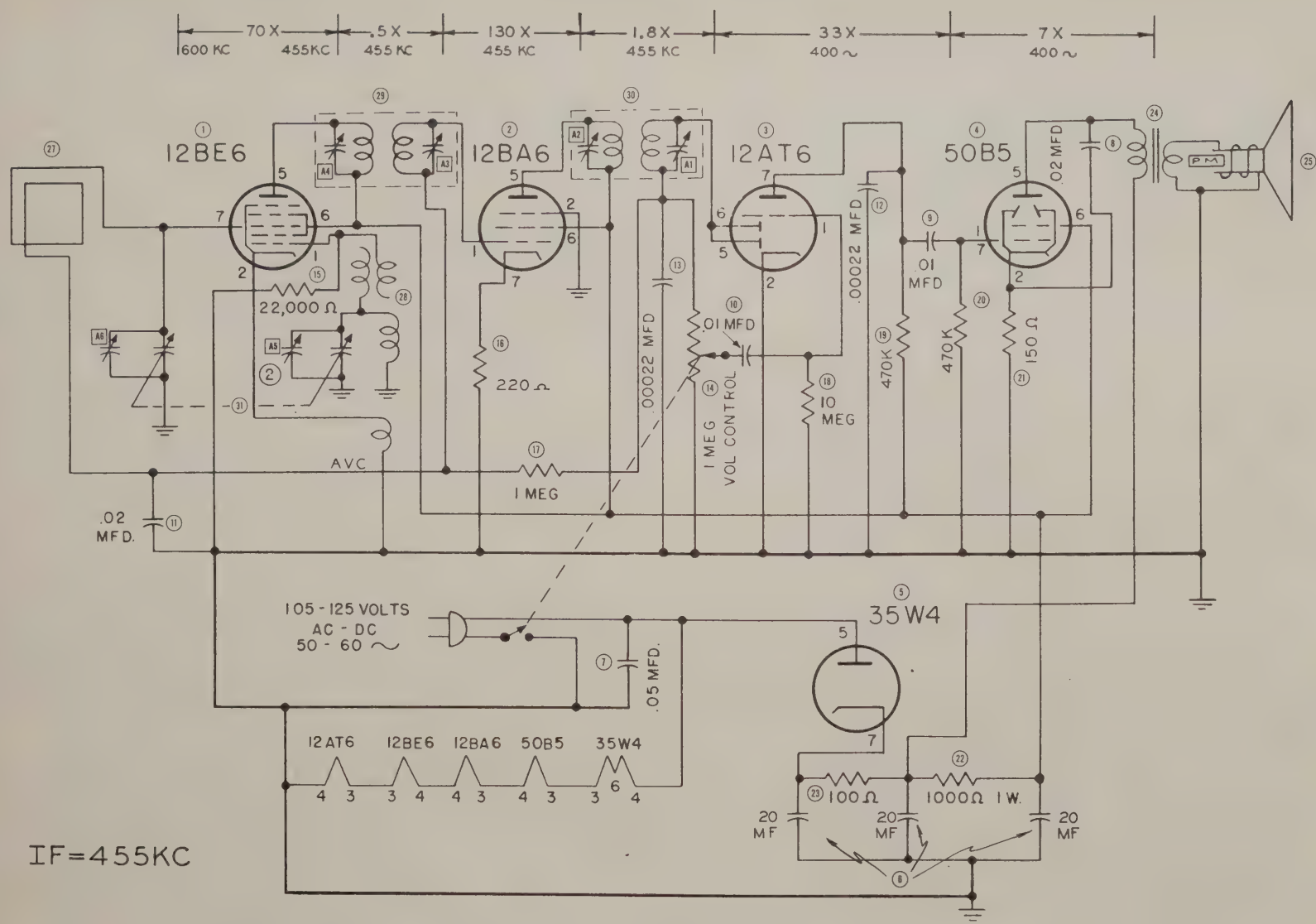
ITEM No.	PART NAME	GAROD PART No.	NOTES
31	2 Gang Var. Cap.	2.200	19-378 MMF, 18-177 MMF



GAROD MODEL 5A-1

CHASSIS—BOTTOM VIEW





Pin No	12BE6 Volt	12BE6 Res	12BA6 Volt	12BA6 Res
1	-6V.DC	25 KΩ	-1V.DC	2 MEG.
2	0V.	.8Ω	0V.	0Ω
3	12V.AC	13Ω	37V.AC	38Ω
4	24V.AC	25 Ω	24V.AC	25Ω
5	100V.DC	60KΩ	100V.DC	60KΩ
6	100V.DC	60KΩ	100V.DC	60KΩ
7	-1V.DC	2 MEG.	1.8V.DC	200Ω

Pin No	12AT6 Volt	12AT6 Res	50B5 Volt	50B5 Res
1	-.5V.DC	10 MEG	0V.	470KΩ
2	0V.	0Ω	6.3V.AC	150Ω
3	12V.AC	13Ω	37V.AC	38Ω
4	0V.	0Ω	82V.AC	80Ω
5	-4V.DC	900KΩ	115V.DC	60KΩ
6	-4V.DC	900KΩ	100V.DC	60KΩ
7	48V.DC	530KΩ	0V.	470KΩ

Pin No	35W4 Volt	35W4 Res
1	122V.DC	60KΩ
2	122V.DC	60KΩ
3	82V.AC	80Ω
4	117V.AC	115Ω
5	117V.AC	115Ω
6	108V.DC	110Ω
7	128V.DC	60KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4712-15

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

GAROD MODEL 5D-3A

TRADE NAME	Garod, Models 5D-3, 5D-3A
MANUFACTURER	Garod Radio Corp., 70 Washington St., Brooklyn 1, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output, 117Z3 Rectifier.
POWER SUPPLY RATING	105-125 Volts AC-DC or 7½ Volt "A" Supply & 67½ Volt "B" Supply .180 Amp. @ 117 Volts AC or 61MA @ 7.5 Volts DC & 10MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200MMF.	High side to front stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Temporarily connect a 100KΩ resistor to the front stator section of tuning cap. and chassis. Adjust for maximum output.
2	200MMF.	"	1650KC	"	"	A5	Adjust for maximum output.
3		Loop	1500KC	Tune for maximum output.	"	A6	Remove 100KΩ resistor. Replace receiver in cabinet and connect loop. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. (A6 is accessible by removing plug in end of cabinet.)

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PARTS LIST AND DESCRIPTIONS

GAROD
MODELS : B-3, BD-3A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		GAROD PART No.	STANDARD REPLACEMENT		
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	
5	Rectifier	117Z3	117Z3	4GR	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	GAROD PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	50	150	5.400-3	†UP6CJ44†		DY-5030-150	EL-340	AF106D20A	■ Filter
B	25	150							▲ "
C	150	25		BRH251		M-250-25	UHC-202	PRS25-50	Filament Bypass
7	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
8	.006	400		DT6D6	TP409	S-6-006	TC-26	484-006	Output Plate Bypass
9	.01	200		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
10	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	Audio Screen Bypass
11	.01	200		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
12	.02	200		DT4S2	TP423	S-4-02	TC-12	484-02	AVC Filter
13	.01	200		DT4S1	TP421	S-4-01	TC-11	484-01	Screen Bypass
14	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Filament Bypass
15	50	500		5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Audio Plate Bypass
16	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-00001	Diode Filter

†Parallel sections for desired capacity.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	GAROD PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
17A	1 Meg.	1	8.200-2	MK402#	D13-137#	AM-63-2#	Volume Control
B	Shaft		Not Req.	Not Req.	E	K55-3	Attach to 17A per instructions
C	Switch		" "	M27	42	SW-A2	" " " "

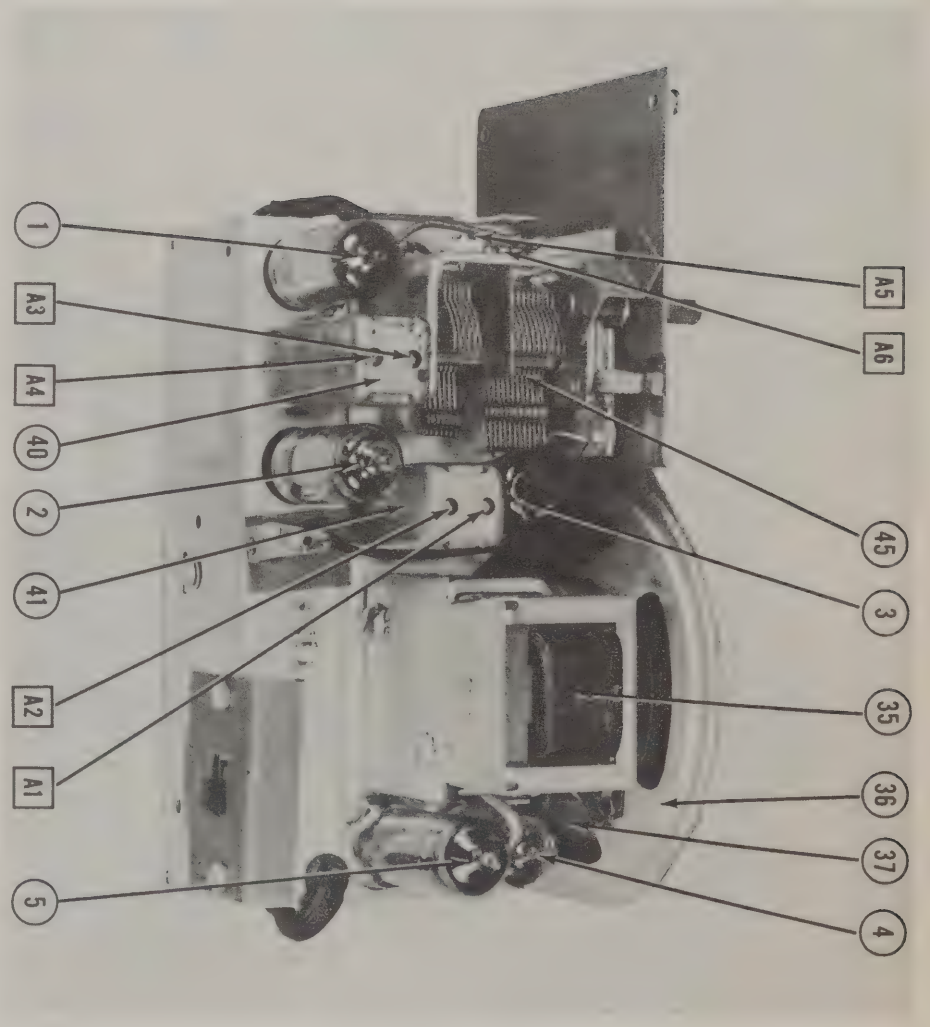
#If original volume control has fixed stop install a 47KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft side terminals down.)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GAROD PART No.	IRC PART No.	
18	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. IF Grid
20	4700Ω	½		BTS-4700	Yl.-Vi.-Red Screen Dropping
21	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
22	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Series Volume Control-See Note
23	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
24	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
25	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
26	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Output Grid
27	270Ω	½		BW-½-270	Red-Vi.-Br. Bias
28	680Ω	½		BTS-680	Blue-Gray-Br. Filament String
29	470Ω	½		BTS-470	Yl.-Vi.-Br. Filament String
30	1000Ω	½		BTS-1000	Br.-Blk.-Red " "
31	1300Ω	5		AB-1250	" "
32	925Ω	5		AB-1000	Filter
33	3300Ω	1		BTA-3300	Or.-Or.-Red "
34	22Ω	½		BW-½-22	Red-Red-Blk. Surge Limiter

Note-Not used on models using volume control with fixed stop.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA GAROD PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	INSTALLATION NOTES
35A	5000Ω	7.5Ω	460Ω	.7Ω	30.308	A-3877*	T22S46*	Used In Model 5D-3A *Bend mounting tabs down, file off slots and mount on original bracket.
B	5000Ω	7.5Ω	290Ω	.4Ω	Part of 30.302	A-3878*	T22S46*	Used in Model 5D-3

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA GAROD PART No.	REPLACEMENT DATA JENSEN PART No.	INSTALLATION NOTES
	FIELD	VC IMP.			
36A	PM	3.2Ω	30.313		Model 5D-3A
	CONE DIA.	VC DIA.			
37A	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT		
	FIELD	VC IMP.			
36B	PM	3.2Ω	30.302		Model 5D-3
	CONE DIA.	VC DIA.			
37B	3½"	½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT		

R F COILS

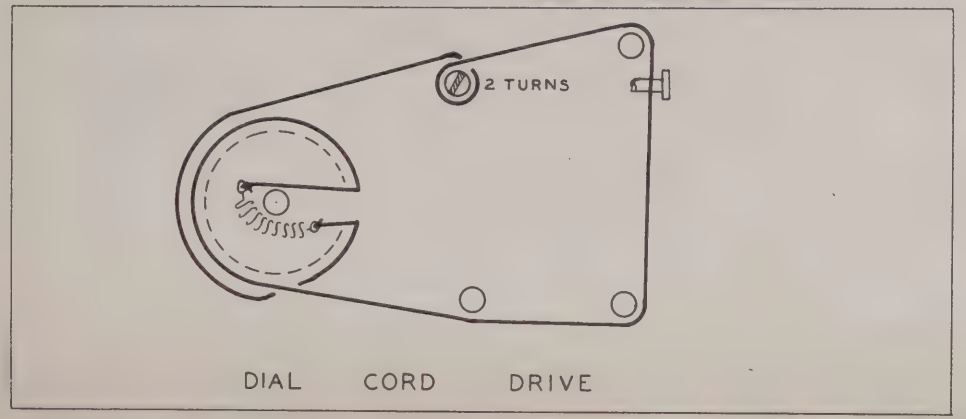
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA GAROD PART No.	REPLACEMENT DATA MEISSNER PART No.	
38A	Loop Ant.		2.5Ω	1.437		Model 5D-3A
B	Loop Ant.			1.405		Model 5D-3
39	Osc. Coil	2Ω	6.0Ω	1.414	14-1040	Add 50 MMFD from grid to high side tuning cap.
40	Input IF	24Ω	19Ω	1.412	16-6668	
41	Output IF	44Ω	43Ω	1.413	16-6669	

BATTERIES

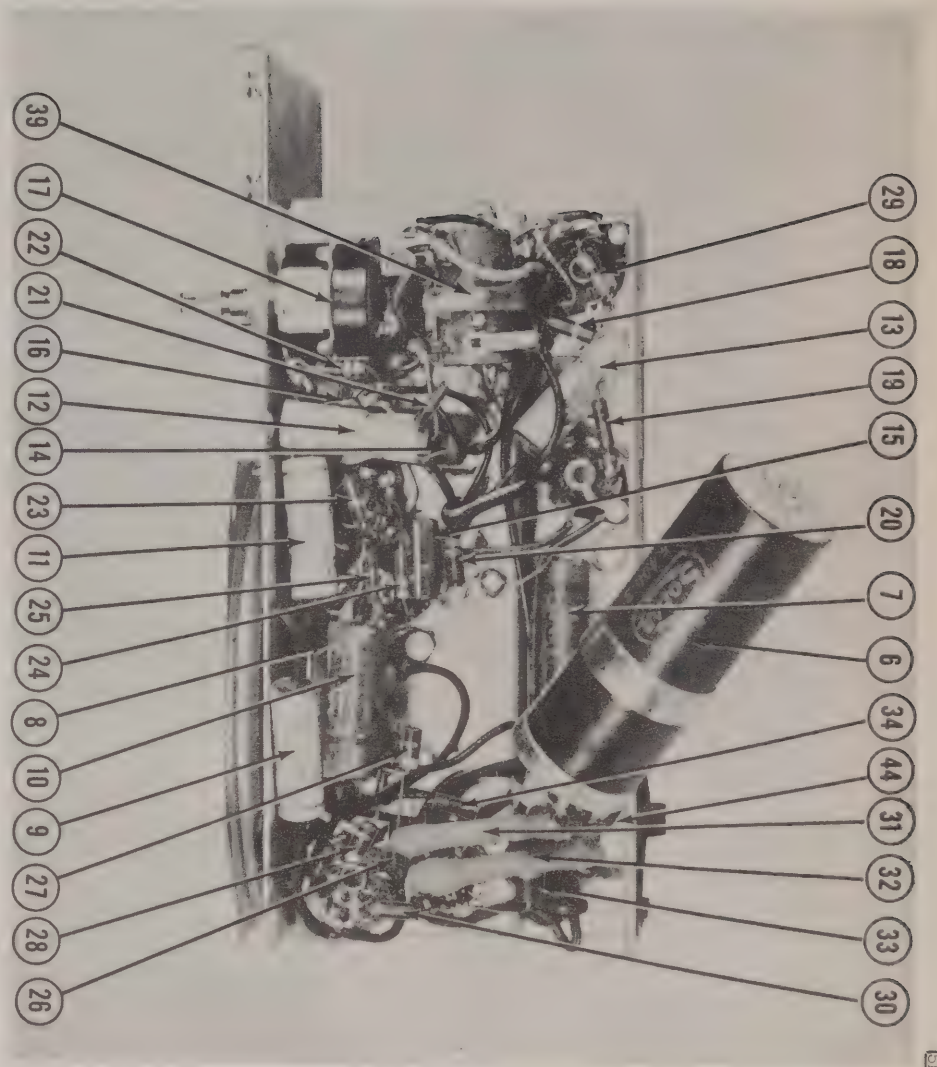
ITEM No.	VOLTAGE	GAROD PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
42	1½V "A"		(5) #950			Five Used in Series
43	67½V "B"			#467		

MISCELLANEOUS

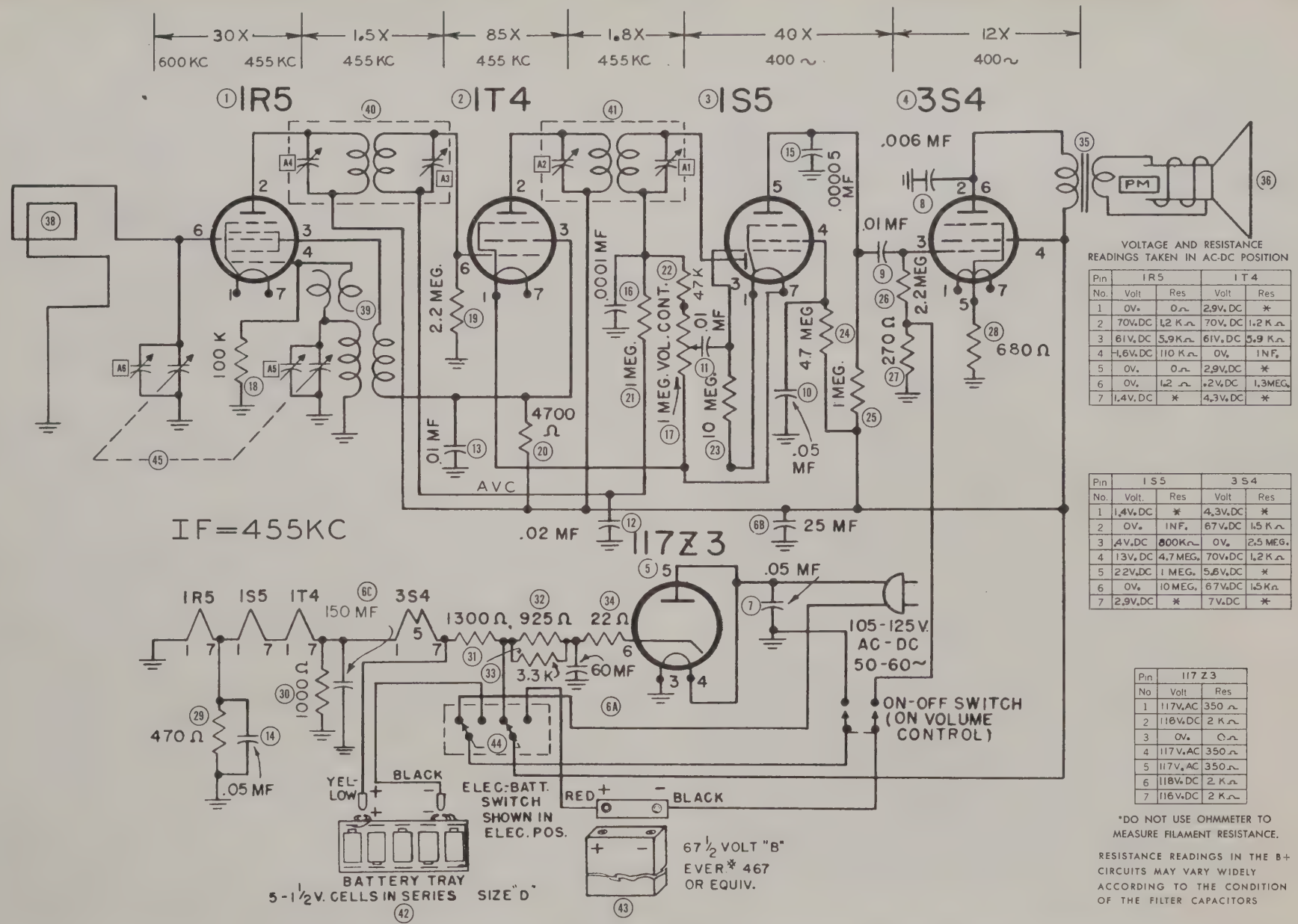
ITEM No.	PART NAME	GAROD PART No.	NOTES
44	Switch	11.207	Power Change-Over (Model 5D-3A)
	"	11.200	" " " (Model 5D-3)
45	2 Gang Var. Cap.	2.203	23-386 MMF, 33-403 MMF



CHASSIS—BOTTOM VIEW



GAROD MODELS 5D-3, 5D-3A



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION

Pin No.	1R5 Volt	1R5 Res	1T4 Volt	1T4 Res
1	0V.	0Ω	2.9V.DC	*
2	70V.DC	1.2 KΩ	70V.DC	1.2 KΩ
3	61V.DC	5.9KΩ	61V.DC	5.9 KΩ
4	1.6V.DC	110 KΩ	0V.	INF.
5	0V.	0Ω	2.9V.DC	*
6	0V.	1.2 Ω	.2V.DC	1.3MEG.
7	1.4V.DC	*	4.3V.DC	*

Pin No.	1S5 Volt.	1S5 Res	3S4 Volt	3S4 Res
1	1.4V.DC	*	4.3V.DC	*
2	0V.	INF.	67V.DC	1.5 KΩ
3	.4V.DC	800KΩ	0V.	2.5 MEG.
4	13V.DC	4.7 MEG.	70V.DC	1.2 KΩ
5	22V.DC	1 MEG.	5.6V.DC	*
6	0V.	10 MEG.	67V.DC	1.5 KΩ
7	2.9V.DC	*	7V.DC	*

Pin No	117Z3 Volt	117Z3 Res
1	117V.AC	350 Ω
2	118V.DC	2 KΩ
3	0V.	0Ω
4	117V.AC	350 Ω
5	117V.AC	350Ω
6	118V.DC	2 KΩ
7	116V.DC	2 KΩ

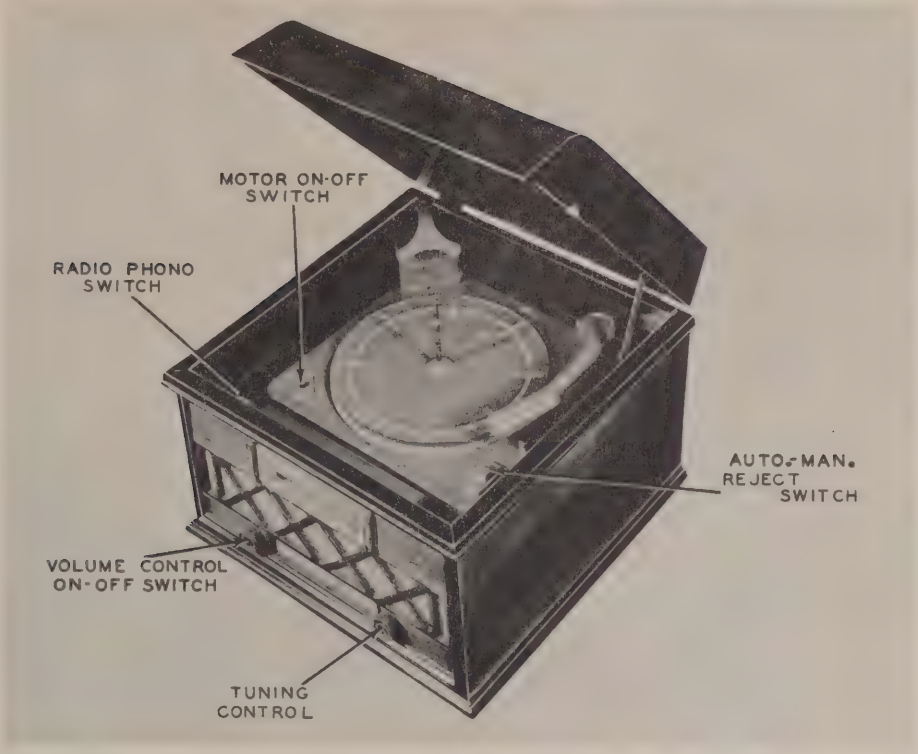
*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE 4712-16

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to Pin 1 of the 1S5 (Item 3) during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.



KNIGHT MODEL 5B-185

TRADE NAME	Knight, Model 5B-185
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne - Self Contained Loop Antenna
TUBES (FOUR)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1725KC RATING .330 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to 1st mark on left end of dial backplate. Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 MFD to reduce hum modulation.
2	250MMFD	"	1725KC	"	"	A5	Adjust for maximum output.
3		Loop	1500KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs.
2. Remove lock nut on phono-control switch.
3. Remove phono-motor plug from receptacle.
4. Disconnect phono-pickup leads.
5. Remove six screws from loop antenna.
6. Remove four screws holding chassis mounting board.
7. Remove chassis.
8. Remove three self-tapping screws holding chassis board to chassis.

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PARTS LIST AND DESCRIPTIONS

KNIGHT MODEL 8B-165

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-IF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	40	150	A18-280	BR4015	TC48	M-40-150	UT-401	PRS150-40	Filter
6	40	150	A18-280	BR4015	TC48	M-40-150	UT-401	PRS150-40	"
7	.1	400	A16-160	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Filter
8	.2	400	A16-154	DT4P2	TP429	S-4-2	TC-2	484-.2	Line Isolation
9	.005	600	A16-153	DT6D5	TP408	S-6-005	TC-25	684-005	Output Plate Bypass
10	.02	400	A16-150	DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
11	.1	200	A16-157	DT4P1	TP428	S-4-1	TC-1	484-.1	Audio Plate Bypass
12	.01	400	A16-156	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
13	.05	200	A16-152	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	250	500	A15-276	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Audio Plate Bypass
15	250	500	A15-276	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	IF Bypass Vol. Cont.
16	50	500	A15-175	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1	A24-164	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

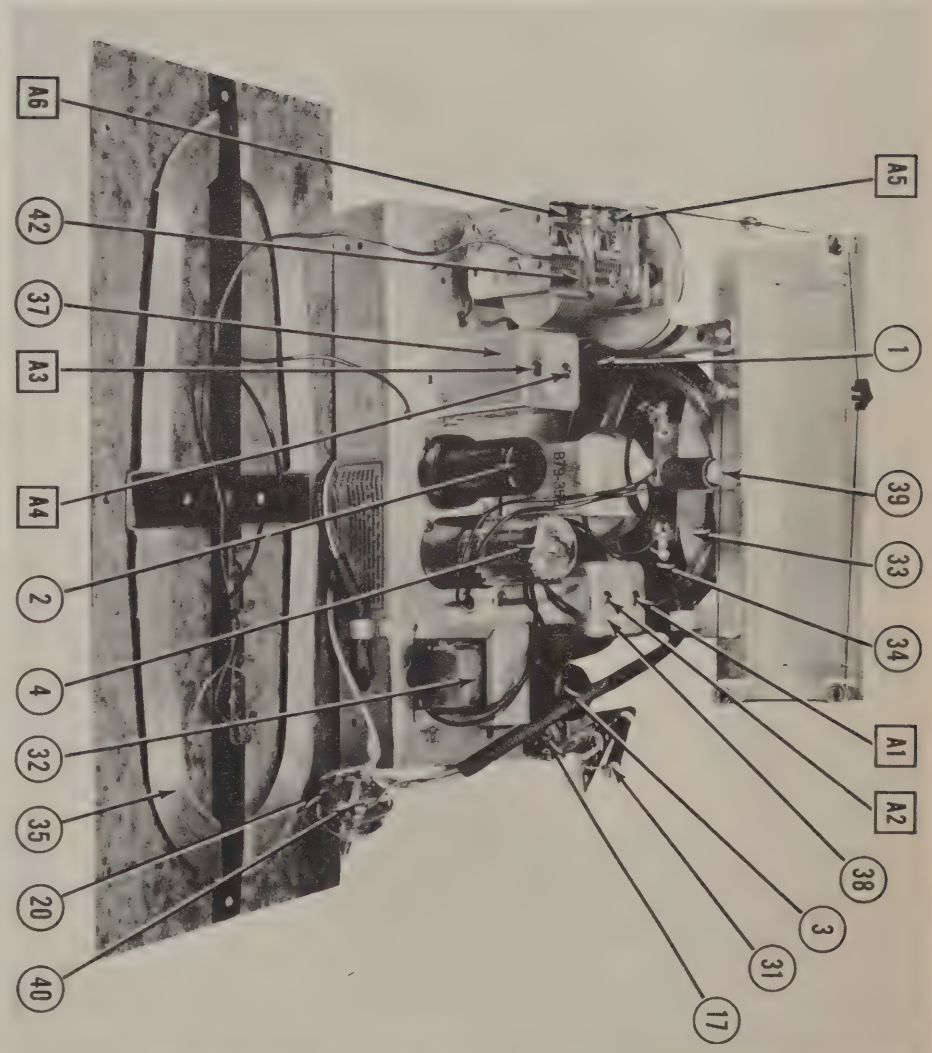
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
18	22KΩ	½	A60-659	BTS-22K	Red-Red-Or. Oscillator Grid
19	15 Meg.	½	A60-664	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
20	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. Series Phono
21	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	4.7 Meg.	½	A60-669	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
23	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
24	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. AF Plate Decoupling
25	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl. Output Grid
26	120Ω	½	A60-702	BW-½-120	Br.-Red-Br. Output Cathode
27	12KΩ	2	A60-720	BT-2-12K	Br.-Red-Or. Bias
28	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl. Line Isolation
29	1000Ω	2	A60-699	BT-2-1000	Br.-Blk.-Red Filter
30	27Ω	1	A60-721	BW-1-27	Red-Vi.-Blk. Surge Limiter
31	940Ω		A60-719		Line Dropping-See Note

Note: This is a special compensating resistor, measuring 940Ω cold and 206Ω hot. Order only from manufacturer.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: KNIGHT PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
32	3000Ω	3.0Ω	300Ω	.8Ω	B80-230	A-3876	T22845		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	KNIGHT PART No.	JENSEN PART No.		
33	PM	3.0Ω	B79-352	ST-107* Mod. P5-V		*Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
34	4½"	½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

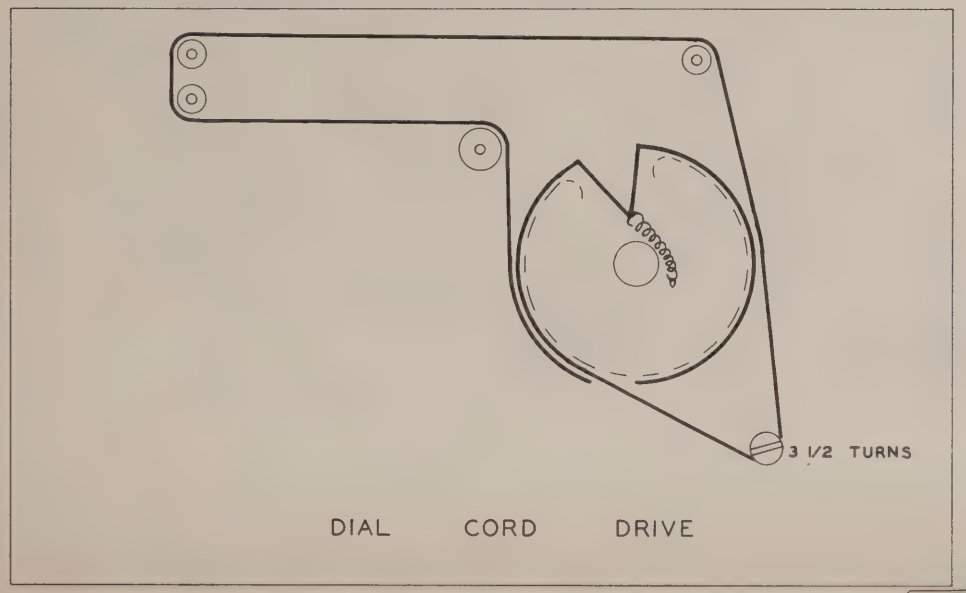
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	KNIGHT PART No.	MEISSNER PART No.
35	Loop Ant.		1.5Ω	C82-43	
36	Osc. Coil	1Ω	6Ω	B10-411	14-1040
37	Input IF	37Ω	33Ω	A10-468	16-6658
38	Output IF	39Ω	37Ω	B10-454	16-6660

DIAL LIGHT

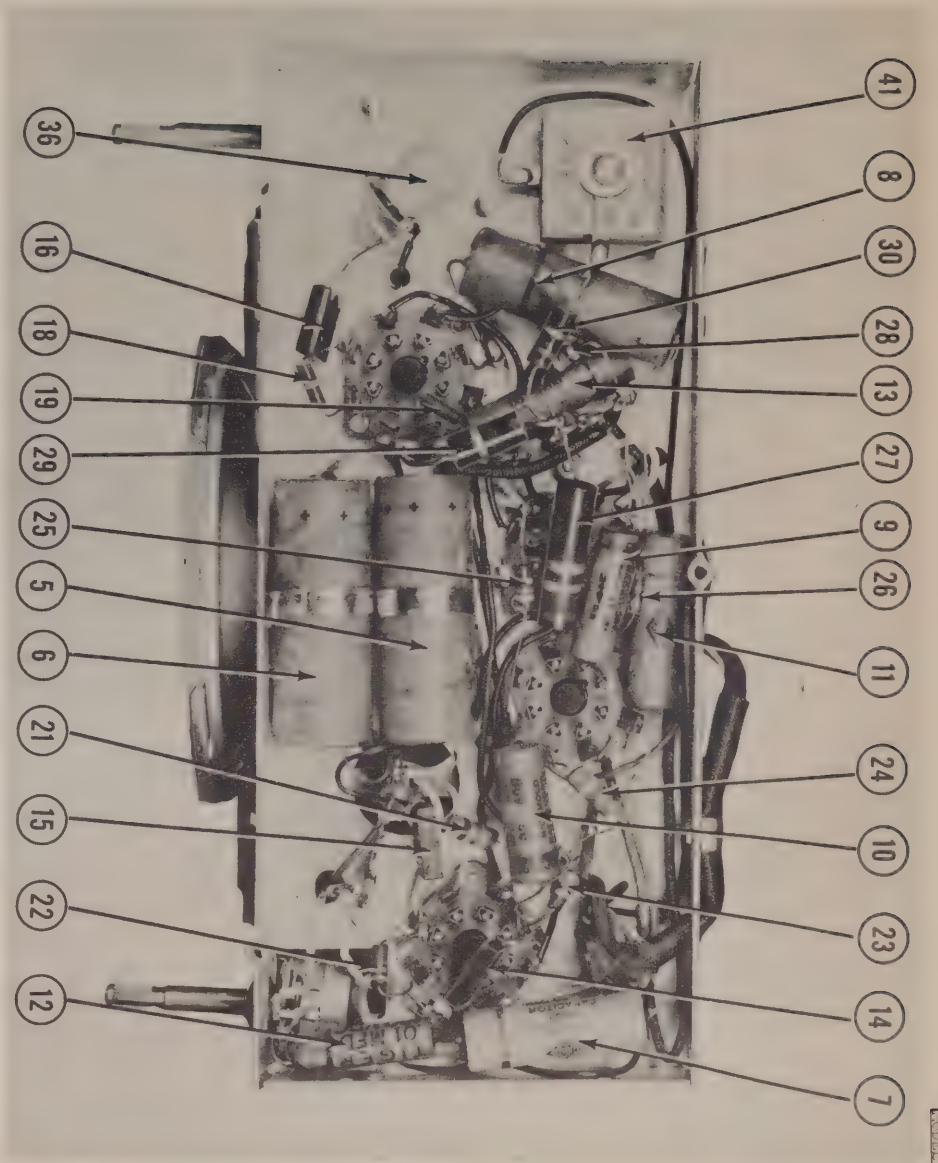
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					KNIGHT PART No.		
39	Bayonet	6.3	0.15	Brown			Type 47

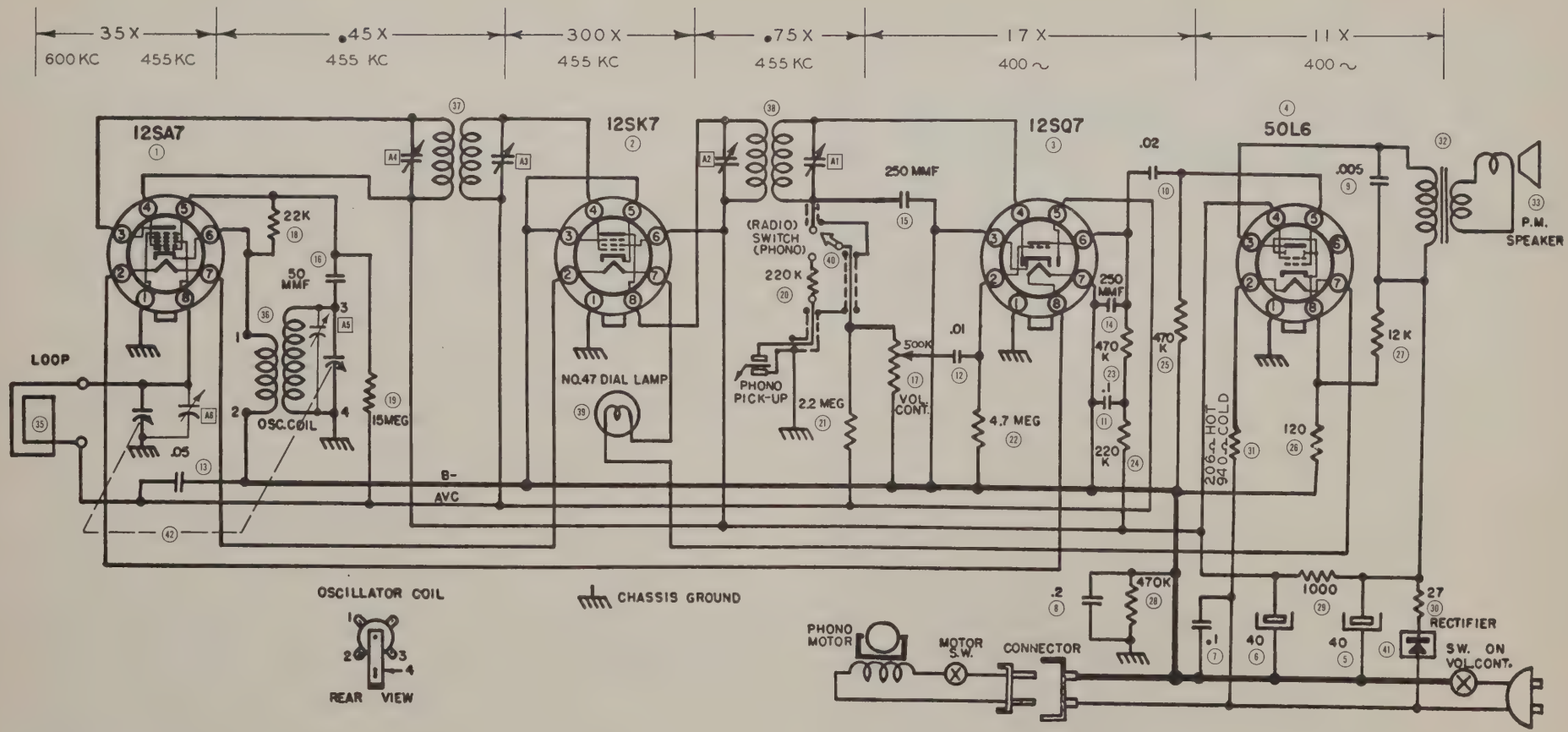
MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
40	Radio-Phono Sw.	A86-172	
41	Rectifier	A83-391	Selenium
42	2 Gang Var. Cap	B19-189	28-474 MMF, 28-191 MMF



CHASSIS—BOTTOM VIEW





IF=455KC

RADIO-PHONO SWITCH IN PHONO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	12V.AC	105V.DC	105V.DC	-5.8V.DC	0V.	24 V.AC	±55 V.DC
2	12SK7	0V.	24 V.AC	0V.	±55V.DC	0V.	105V.DC	40 V.AC	105V.DC
3	12SQ7	0V.	±57V.DC	0V.	-32V.DC	-55V.DC	40V.DC	12V.AC	0V.
4	50L6GT	0V.	90V.AC	123V.DC	105V.DC	0V.	0V.	40V.AC	6.6V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	460 KΩ	11Ω	10 KΩ	10 MΩ	20 KΩ	.5Ω	23Ω	1.9MEG
2	12SK7	460 KΩ	23Ω	0Ω	1.9MEG	0Ω	10 KΩ	35Ω	10 KΩ
3	12SQ7	460 KΩ	4.5MEG	0Ω	490 KΩ	1.9MEG	675 KΩ	11Ω	0Ω
4	50L6GT	460 KΩ	78Ω	10 KΩ	10 KΩ	400 KΩ	.1 MF.	35Ω	110Ω

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4712-17

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MAGIC-TONE
MODEL 504

MAGIC-TONE
MODEL 504

MAGIC-TONE MODEL 504

TRADE NAME	Magic-Tone, Model 504 (Bottle Receiver)
MANUFACTURER	Radio Development & Research Corp., 233 W. 54th St., New York 19, N.Y.
TYPE SET	AC-DC Operated TRF Receiver
TUBES (FOUR)	Types, 12SK7 RF Amp., 12SQ7 Det.-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	530-1600KC RATING .210 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	100MMFD	High side to ext. ant. lead. Low side to chassis.	1600KC	Tuning cap. fully open.	Across voice coil	A1,A2,	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	100MMFD	"	1500KC	Tune for maximum output.	"	A1,A2,	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

MAGIC-TONE MODEL 104

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAGIC-TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	8N	
2	Det.-AF	12SQ7	12SQ7	8Q	
3	Power Output	50L6GT	50L6GT	7AC	
4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAGIC-TONE PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	30	150		EZ3215C	3N533	DSB-302	TA-230	PRSA150-30-20	Filter-Yellow
B	20	150							" -Green
C	5	25					TA-5	PRS25-10	Cath. Bypass - Red
6	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Line Filter
7	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Output Plate Bypass
8	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
9	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	RF Cath. Bypass
10	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Audio Plate Bypass
11	5000	300		1W5D5	MC465	MW.5-25	1FM-25	1467-005	Detector Grid Capacitor
12	5000	300		1W5D5	MC465	MW.5-25	1FM-25	1467-005	Ant. Coupling
13	10			5R5Q1	MCB220	MOS.5-41	MS-41	1469-00001	RF Coupling
14	10			5R5Q1	MCB220	MOS.5-41	MS-41	1469-00001	" "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGIC-TONE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
15	25KΩ	1					Volume Control & Sw. 900-17A

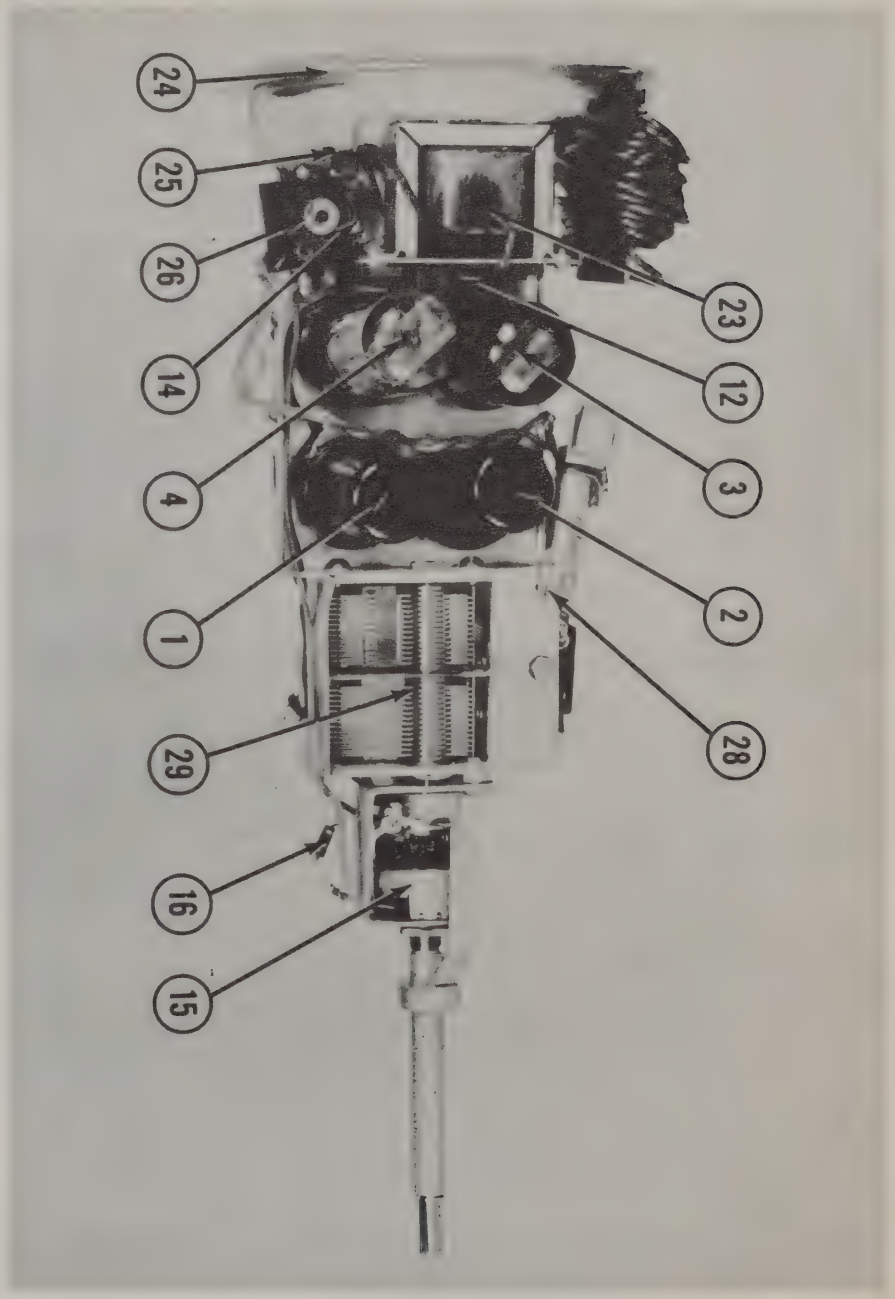
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGIC-TONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
16	150Ω	½		BW-½-150	Br.-Grn.-Br. RF Cathode
17	6.2 Meg.	½		BTS-5.6 Meg.	Blue-Red-Grn. Detector Grid
18	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Detector Plate Load
19	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Output Grid
20	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
21	3000Ω	1		BTA-2700	Or.-Blk.-Red Filter
22	50Ω	2		BW-2-47	Grn.-Blk.-Blk. Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAGIC-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
23	4000Ω	3.4Ω	190Ω	.5Ω		A-3656	T22S46		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MAGIC-TONE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
24	PM	3.2Ω				
	CONE DIA.	VC DIA.				
25	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MAGIC-TONE PART No.	MEISSNER PART No.	
26	Ant. Coil	38Ω	2Ω			
27	RF Coil	80Ω	2Ω			

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MAGIC-TONE PART No.		INSTALLATION NOTES
28	Bayonet	6-8	0.15	Brown			Type 47

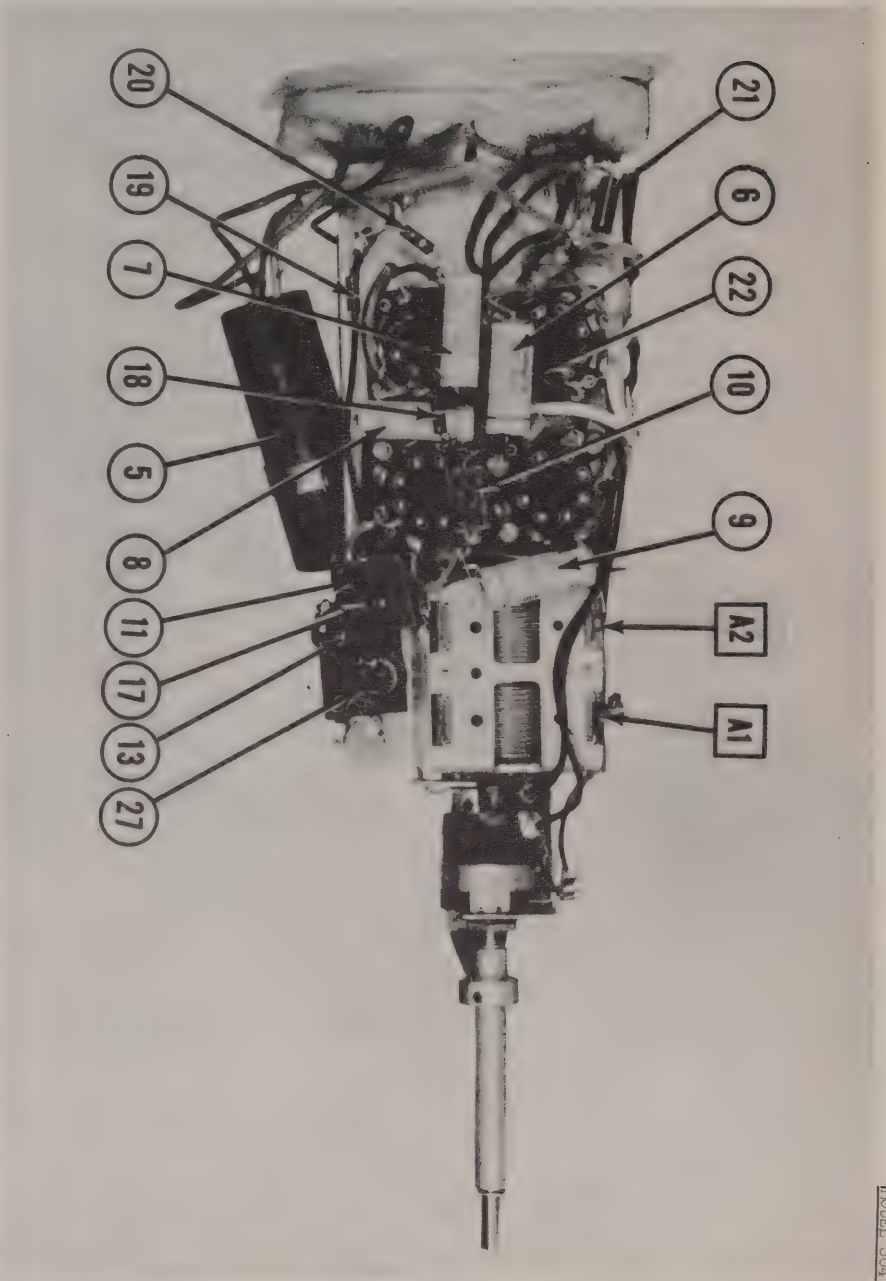
MISCELLANEOUS

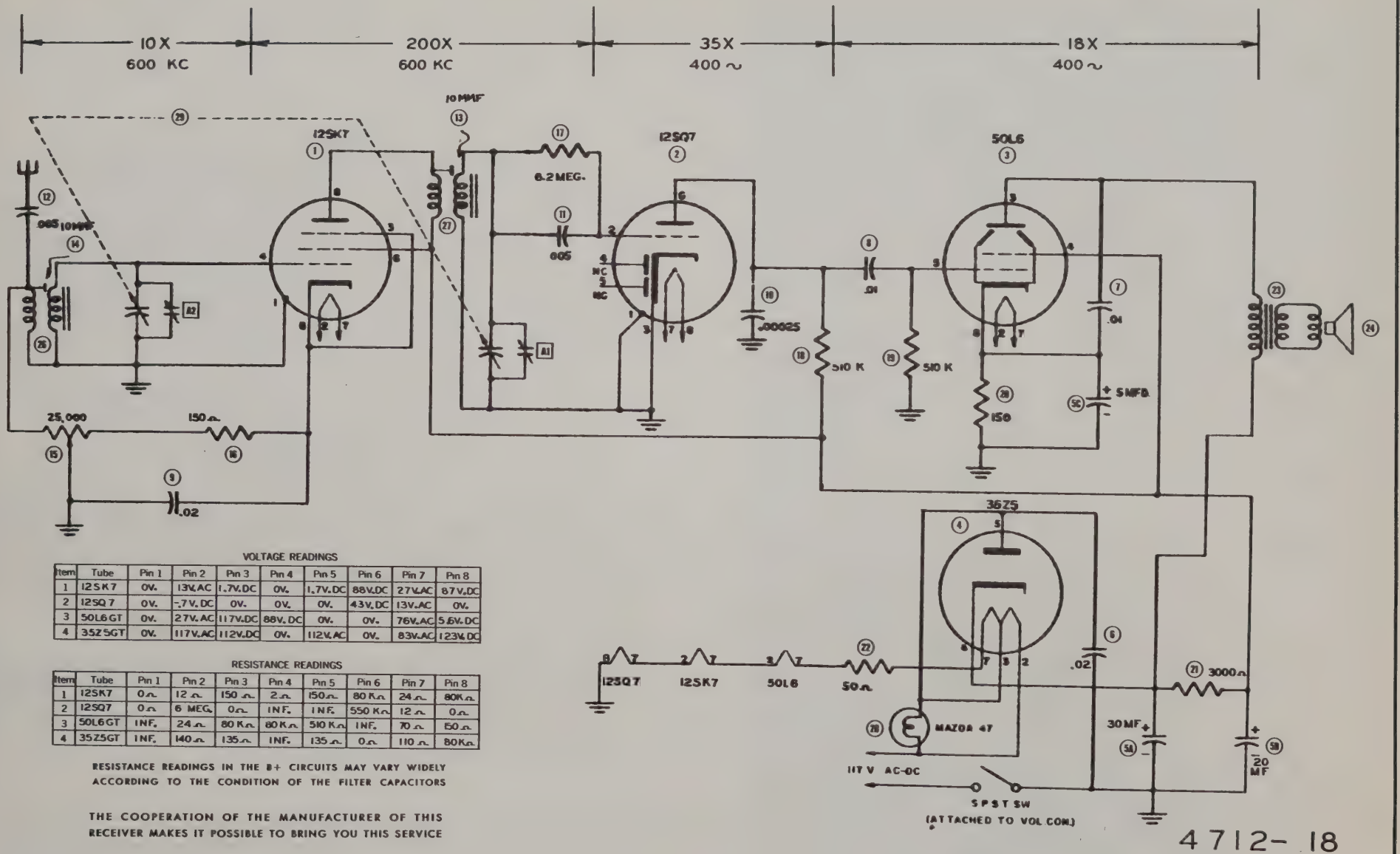
ITEM No.	PART NAME	MAGIC-TONE PART No.	NOTES
29	2 Gang Var. Cap.		21-461 MMF (each section)

DISASSEMBLY INSTRUCTIONS

CAUTION-Do not remove the two Phillips head screws at base of bottle..
1. Remove four screws holding cover board to bottom of plastic base. Remove cover board.
2. Remove one push on type on-off control knob.
3. Remove set screw holding dial knob. Remove dial knob.
4. Remove two screws holding speaker inside plastic base. Slide speaker and chassis out bottom of bottle.

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0V.	13V.AC	1.7V.DC	0V.	1.7V.DC	88V.DC	27V.AC	87V.DC
2	12SQ7	0V.	-.7V.DC	0V.	0V.	0V.	43V.DC	13V.AC	0V.
3	50L6GT	0V.	27V.AC	117V.DC	88V.DC	0V.	0V.	76V.AC	5.6V.DC
4	35Z5GT	0V.	117V.AC	112V.DC	0V.	112V.AC	0V.	83V.AC	123V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0Ω	12 Ω	150 Ω	2 Ω	150Ω	80 KΩ	24 Ω	80KΩ
2	12SQ7	0Ω	6 MEG.	0Ω	INF.	INF.	550 KΩ	12 Ω	0Ω
3	50L6GT	INF.	24 Ω	80 KΩ	80 KΩ	510 KΩ	INF.	70 Ω	150Ω
4	35Z5GT	INF.	140Ω	135Ω	INF.	135Ω	0Ω	110 Ω	80KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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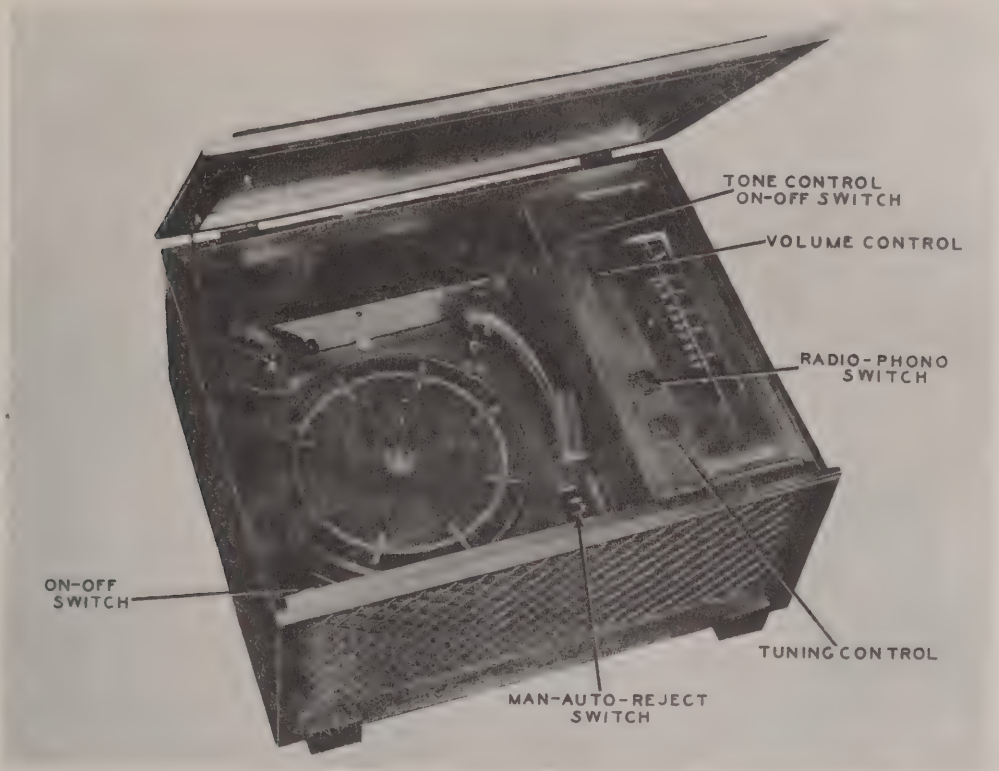
4712-18

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

MAJESTIC
MODELS 7S433, 7S450, 7S470



MAJESTIC
MODELS 7S433, 7S450, 7S470

TRADE NAME	Majestic, Models 7S433, 7S450, 7S470 (Chassis 4702, 4703)
MANUFACTURER	Majestic Radio & Tele. Corp., St. Charles, Ill.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (SEVEN)	Types, 6SA7 Converter, 6SK7 IF Amp., 6SQ7GT Det.-AVC-AF, 6J5 Phase Inverter, (2) 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .9 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1630KC — **SHORT WAVE** 5.7-17.8MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to center stator of tuning cap. Low side to chassis.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2		Loop	1500KC	"	1500KC	"	A5,A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	600KC	"	Tune for maximum output.	"	A7	Rock tuning cap. and adjust for maximum output. Repeat steps 2 and 3.
4	400Ω	High side to "A" terminal. Low side to "G" terminal of ant. terminal board.	17MC	SW	17MC	"	A8	Adjust for maximum output.
5	400Ω	"	"	"	Tune for maximum output.	"	A9	Rock tuning cap. and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

MAJESTIC MODELS 7S430, 7S450, 7S470

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SA7	6SA7	8R	
2	IF Amp.	6SK7	6SK7	8N	
3	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
4	Phase Inverter	6J5	6J5	6Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Power Output	6K6GT	6K6GT	7S	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	16	450	19-16	BRDI845	2S569	DH-2x16-450SS	TU-1616	PRSA450-16-16	Filter - Red
B	16	450						"	- Green
9	.001	400	6-129	DT6D1	TP404	S-6-001	TC-21	484-001	Output Plate Bypass
10	.001	400	6-129	DT6D1	TP404	S-6-001	TC-21	484-001	" " "
11	.001	400	6-129	DT6D1	TP404	S-6-001	TC-21	484-001	" " "
12	.01	400	6-132	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
13	.01	400	6-132	DT4S1	TP421	S-4-01	TC-11	484-01	" "
14	.05	200	5-40	DT4S5	TP426	S-4-05	TC-15	484-05	Bias Filter
15	.006	400	6-133	DT6D6	TP409	S-6-006	TC-26	484-006	Tone Compensation
16	.01	200	5-57	DT4S1	TP421	S-4-01	TC-11	484-01	" "
17	.01	400	6-132	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
18	.006	400	6-133	DT6D6	TP409	S-6-006	TC-26	484-006	" "
19	.01	400	6-132	DT4S1	TP421	S-4-01	TC-11	484-01	" "
20	.05	400	6-130	DT4S5	TP426	S-4-05	TC-15	484-05	IF Screen Bypass
21	.1	200	5-39	DT4P1	TP428	S-4-1	TC-1	484-.1	IF Cath. Bypass
22	.05	400	6-130	DT4S5	TP426	S-4-05	TC-15	484-05	Conv. Plate Decoup.
23	.01	400	6-132	DT4S1	TP421	S-4-01	TC-11	484-01	Conv. Screen Bypass
24	.1	200	5-39	DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
25	220	500	6-151	5W5T2	MC237	MO.5-322	1FM-32	1468-0002	Audio Plate Bypass
26	47	500	6-159	5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	Osc. Grid Capacitor
27	15	500							Fixed Trimmer
28	6900	500	6-177						Fixed Padder
29	15	500							Fixed Trimmer
30	50	500	6-125	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Loop Pri. Shunt

CONTROLS

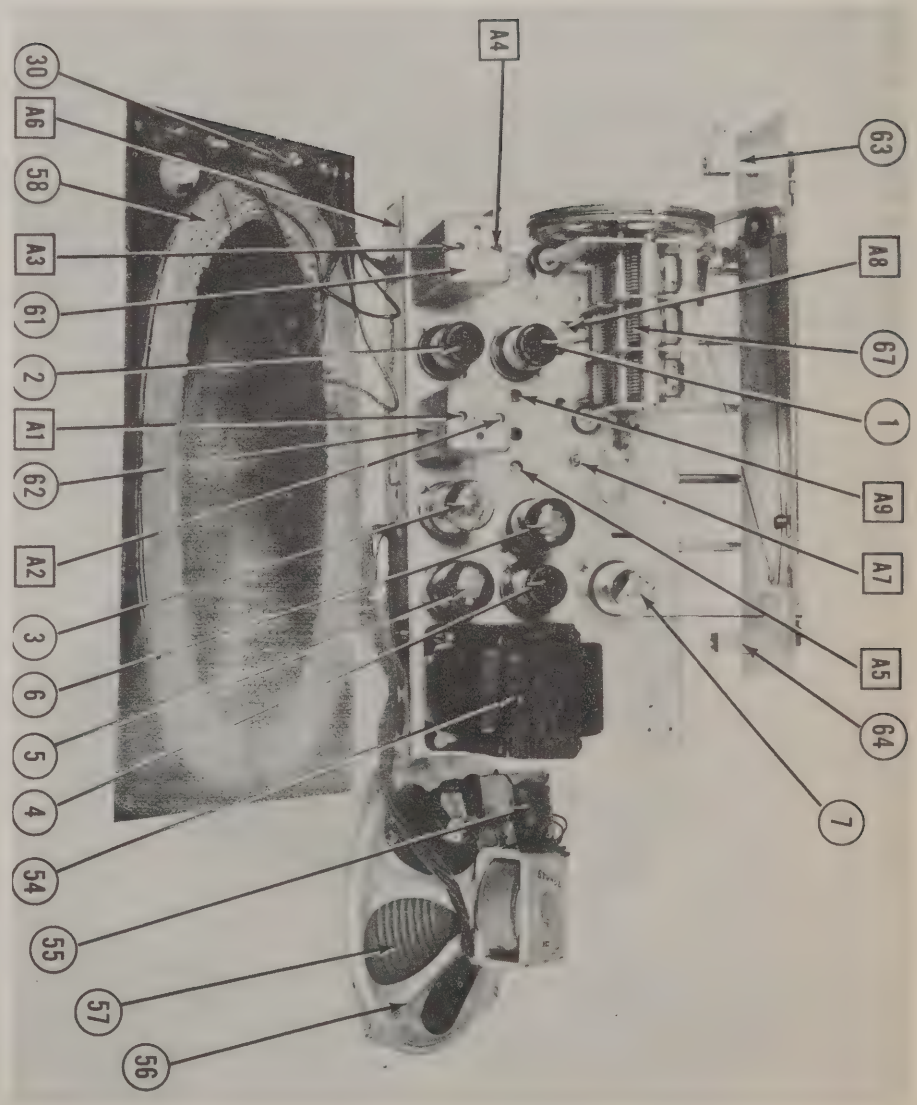
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
31A	2 Meg.	1	13-15	TM249	D13-139X	AT-115	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 31A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
32	2 Meg.	1	14-4				Tone Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
33	22KΩ	½	9-184	BTS-22K	Red-Red-Or. Oscillator Grid
34	22KΩ	1	9-186	BTA-22K	Red-Red-Or. Converter Screen Dropping
35	10KΩ	½	9-17	BTS-10K	Br.-Blk.-Or. Converter Plate Decoupling
36	2.2 Meg.	½	9-183	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
37	180Ω	½	9-173	BW-½-180	Br.-Gray-Br. IF Cathode
38	56KΩ	½	9-177	BTS-56K	Grn.-Blue-Or. IF Screen Dropping
39	470KΩ	½	9-227	BTS-470K	Yl.-Vi.-Yl. Diode Load
40	10 Meg.	½	9-160	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
41	470KΩ	½	9-4	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
42	470KΩ	½	9-4	BTS-470K	Yl.-Vi.-Yl. Phase Inverter Grid
43	220KΩ	½	9-182	BTS-220K	Red-Red-Yl. Phase Inverter Grid
44	2200Ω	½	9-7	BTS-2200	Red-Red-Red Phase Inverter Cathode
45	18KΩ	½	9-95	BTS-18K	Br.-Gray-Or. Phase Inverter Cathode
46	22KΩ	½	9-180	BTS-22K	Red-Red-Or. Phase Inverter Plate Load
47	470KΩ	½	9-4	BTS-470K	Yl.-Vi.-Yl. Output Grid
48	470KΩ	½	9-4	BTS-470K	Yl.-Vi.-Yl. Output Grid
49	390Ω	2	9-185	BW-2-390	Or.-White-Br. Output Cathode
50	2.2 Meg.	½	9-183	BTS-2.2 Meg.	Red-Red-Grn. Feedback
51	18KΩ	½	9-225	BTS-18K	Br.-Gray-Or. Tone Compensation
52	500Ω	5	9-287	AB-500	Filter-See Note

Note-Used only in models using PM speakers.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: MAJESTIC PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
53			12-26				Used only in models using PM speaker.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	
54	117V AC @ .9A	670V CT @ .087A	5.1V AC @ 1.9A	6.5V AC @ 2.5A	2-12	P-6013	T22R32*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
55A	9500Ω CT	3.2Ω	800Ω CT	.5Ω	22-8-2	A-3823	T22S87#		#Use 8000Ω tap with the 4000Ω tap as center. Used with PM speakers. †Drill new mounting holes.
B					12-23	A-2201†	T22S56†		

SPEAKER

ITEM No.	RATINGS: FIELD RES. / CONE DIA.	RATINGS: VC IMP. / VC DIA.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.				
56A	650Ω	3.2Ω	22-8-1			
	CONE DIA.	VC DIA.				
57A	7-3/8"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			
56B			22-21			Alternate Speaker 8" PM
C			22-22			" " 10" PM
D			22-23			" " 12" PM

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: MEISSNER PART No.	
58A	Loop Ant.	28Ω	3Ω	20-20		
B	Loop Ant.			S-1192		Model 7S433
59	SW Ant.Coil	.5Ω	0Ω	3-120		
60A	BC Osc.Coil		5.5Ω	3-177		Items 60A & 60B are wound on same form.
B	SW " "		0Ω			
61	Input IF	11Ω	11Ω	3-165	16-6658	
62	Output IF	11Ω		3-166	16-6670	

DIAL LIGHT

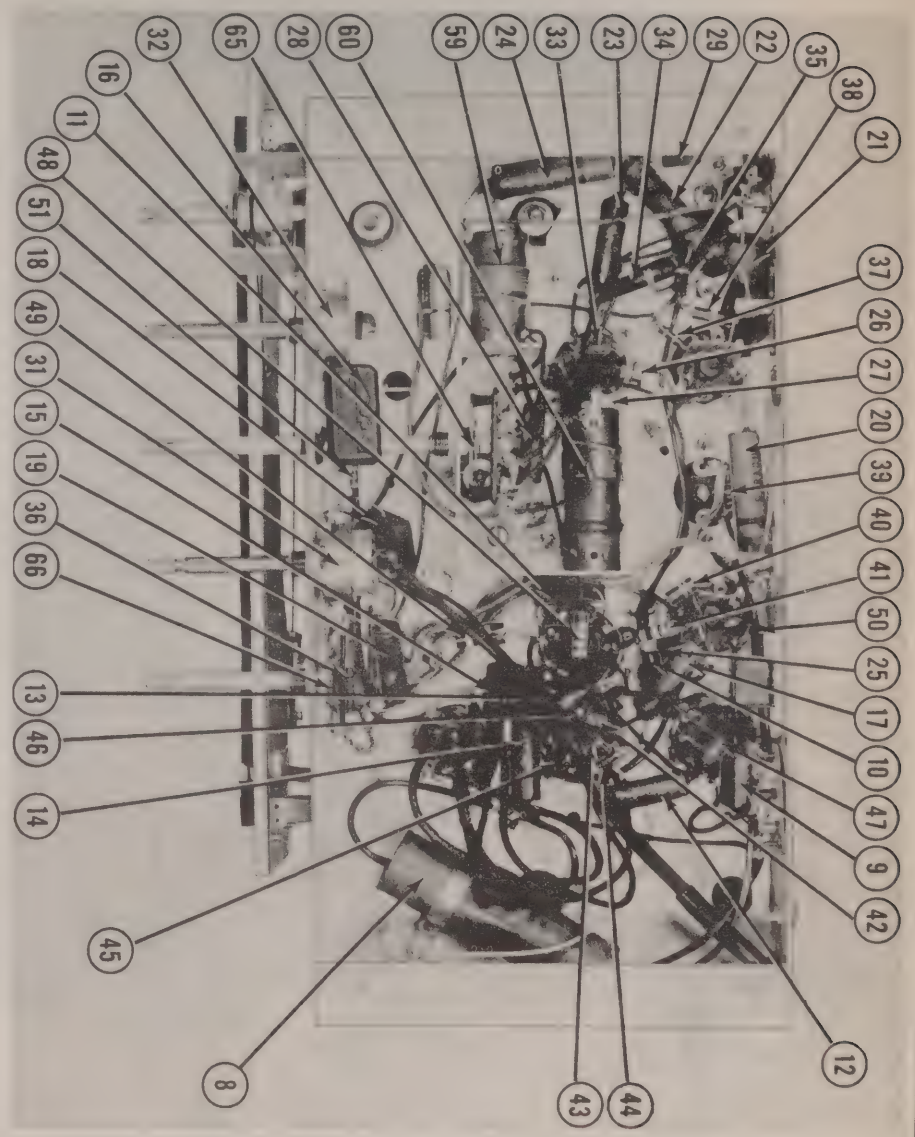
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MAJESTIC PART No.		INSTALLATION NOTES
63	Bayonet	6-8	0.25	Blue	26-7		Type 44
64	"	"	"	"	"		"

MISCELLANEOUS

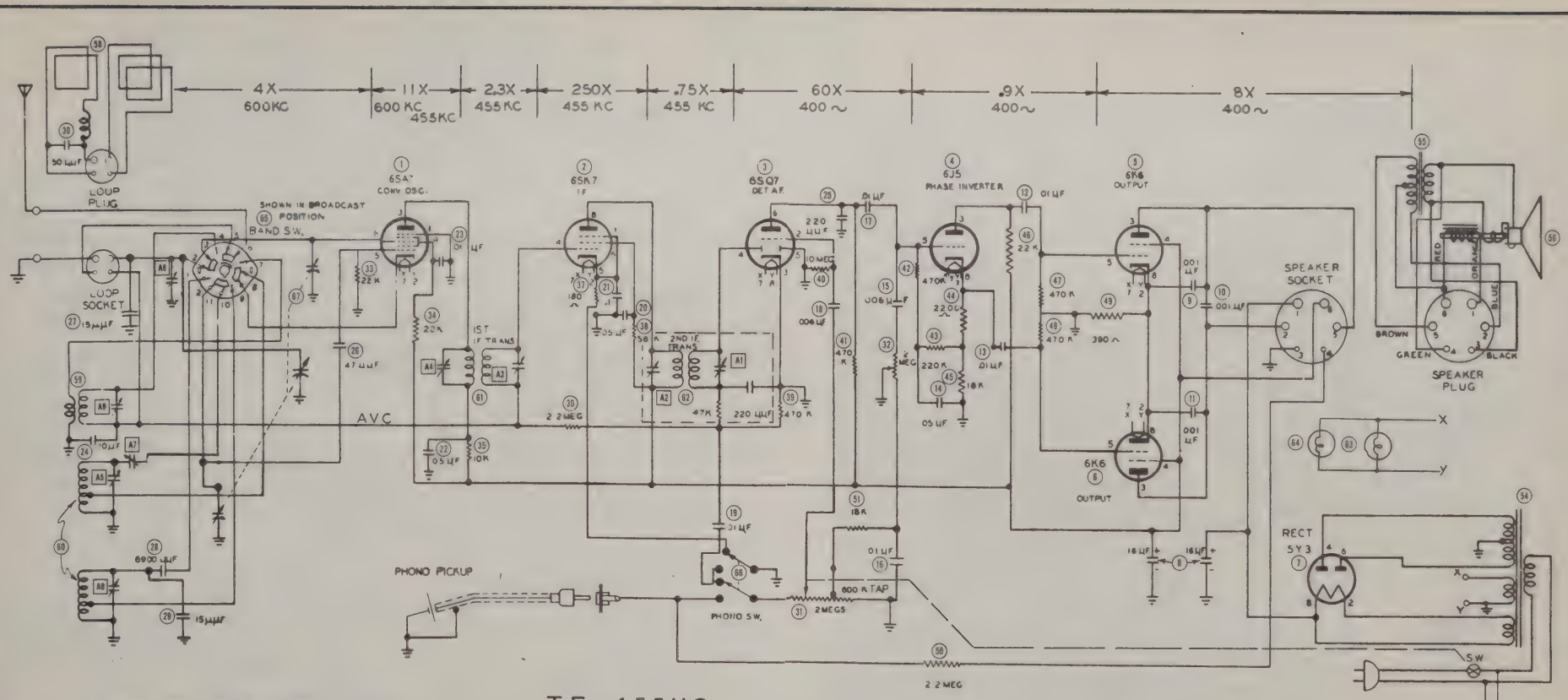
ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
65	Switch	11-46	Band Change
66	Switch	11-45	Radio-Phono
67	3 Gang Var. Cap	7-18	23-420 MMF (each section)
A5	Trimmer	8-35	2.5-30 MMF-BC Osc. Adj.
A6	"	8-36	1.5-15 MMF-BC Ant. Adj.
A7	"	8-33	330-960 MMF-BC Osc. Padder
A8	"	8-36	1.5-15 MMF-SW Osc. Adj.
A9	"	8-35	2.5-30 MMF-SW Ant. Adj.
	Dial Pointer	135-6	
	Dial Scale	117-60	Model 7S433
	" "	117-51	Models 7S450, 7S470
	Crystal Cartridge		ASTATIC Type L-70

MAJESTIC MODELS 7S433, 7S450, 7S470

CHASSIS—BOTTOM VIEW



MAJESTIC MODELS 7S433, 7S450, 7S470



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0V.	0V.	265V.DC	85 V. DC	-3.5V.DC	0V.	6.5V. AC	-2 V. DC
2	6SK7	0V.	0V.	2.6V. DC	-2V. DC	2.6V. DC	1 2V. DC	6.5V. AC	280V. DC
3	6SQ7GT	0V.	-6V. DC	0V.	-5V. DC	0V.	108V. DC	6.5V. AC	0V.
4	6J5	0V.	0V.	223V. DC	26V. DC	23V. DC	53V. DC	6.5V. AC	60V. DC
5	6K6 GT	0V.	0V.	275V. DC	282V. DC	0V.	0V.	6.5V. AC	23V. DC
6	6K6 GT	0V.	0V.	275V. DC	282V. DC	0V.	0V.	6.5V. AC	23V. DC
7	5Y3 GT	0V.	340V. DC	0V.	335V. AC	0V.	335V. AC	0V.	340V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0 Ω	0 Ω	370 KΩ	380 KΩ	22 KΩ	.5 Ω	.1 Ω	2.5 MEG.
2	6SK7	0 Ω	0 Ω	160 Ω	2.5 MEG.	160 Ω	415 KΩ	.1 Ω	360 KΩ
3	6SQ7GT	0 Ω	10 MEG.	0 Ω	480 KΩ	0 Ω	830 KΩ	.1 Ω	0 Ω
4	6J5	0 Ω	0 Ω	380 KΩ	250 KΩ	700 KΩ	18 KΩ	.1 Ω	20 KΩ
5	6K6 GT	0 Ω	0 Ω	360 KΩ	360 KΩ	460 KΩ	360 KΩ	.1 Ω	370 Ω
6	6K6 GT	0 Ω	0 Ω	360 KΩ	360 KΩ	460 KΩ	INF.	.1 Ω	370 Ω
7	5Y3 GT	INF.	360 KΩ	2 MEG.	90 Ω	INF.	100 Ω	INF.	360 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4712-19

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MONITOR
MODEL M-403

MONITOR
MODEL M-403

MONITOR MODEL M-403

TRADE NAME	Monitor, Model M-403 (Factory No. 470-2)
MANUFACTURER	Monitor Equip. Corp., 110 E. 42nd St., New York, N.Y.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (FOUR)	Types, 12SA7GT Converter, 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	530-1600KC RATING .280 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Place signal generator lead near loop.	1590KC	"	"	A3,A4.	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

MONITOR
MODEL M-403

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MONITOR PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	8AD	
2	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
3	Power Output	50L6GT	50L6GT	7AC	
4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MONITOR PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
5A	50	150		UP5315	FP214	DY-5030-150	EL-35	AF1010D	▲ Filter
B	30	150							■ "
6	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
7	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
8	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
9	.001	600		DT6D1	TP404	S-6-001	TC-21	684-001	Audio Plate Bypass
10	.002	400		DT6D2	TP405	S-6-002	TC-22	484-002	Audio Coupling
11	.05	400		DT4S5	TP426	S-4_05	TC-15	484-05	AVC Filter
12	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Phono Isolation
13	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter Cer.
14	47	500		5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	Loop Pri. Shunt Cer.

CONTROLS

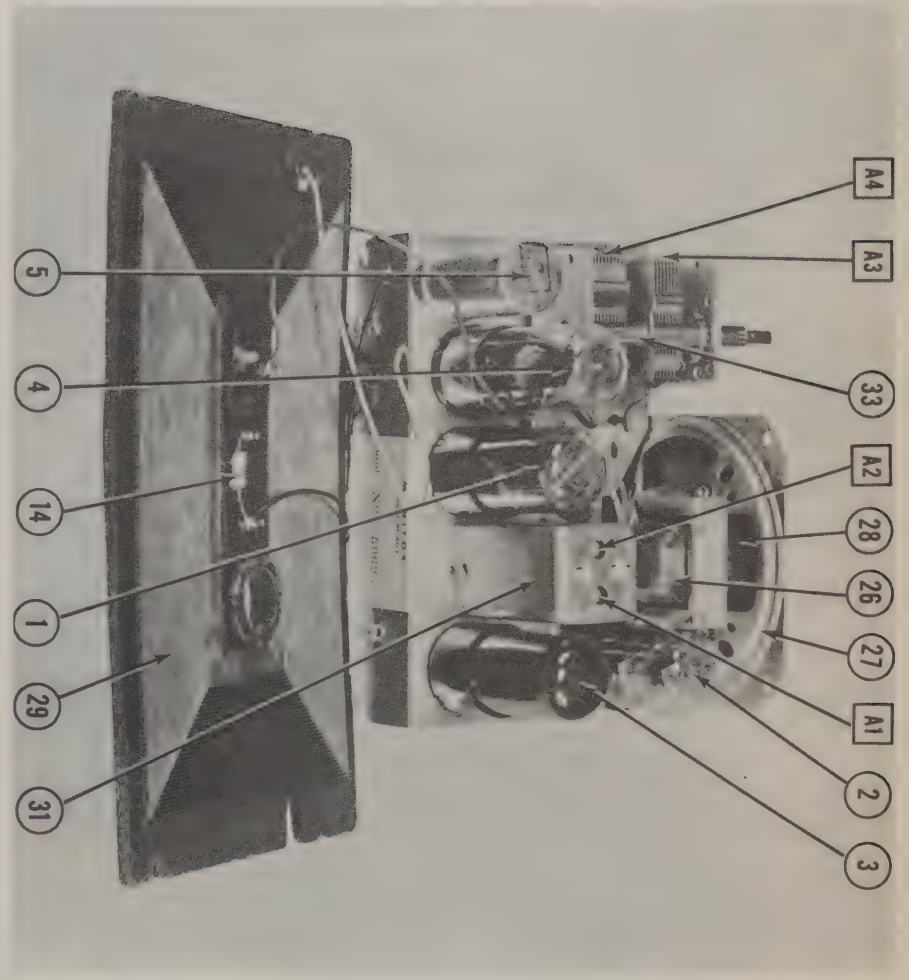
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MONITOR PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	2 Meg.	1	2480	MR55	D13-139	M-66-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 15A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MONITOR PART No.	IRC PART No.	
16	18KΩ	¼		BTS-18K	Br.-Gray-Or. Oscillator Grid
17	4.7 Meg.	¼		BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
18	4.7 Meg.	¼		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
19	220KΩ	¼		BTS-220K	Red-Red-Yl. AF Plate Load
20	330KΩ	¼		BTS-330K	Or.-Or.-Yl. Output Grid
21	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. Series Phono
22	100KΩ	¼		BTS-100K	Br.-Blk.-Yl. Phono Shunt
23	27Ω	½		BW-½-27	Red-Vi.-Blk. Series Filament
24	3300Ω	2		BT-2-3300	Or.-Or.-Red Filter - See Note
25	18Ω	½		BW-½-18	Br.-Gray-Blk. Rectifier Ballast

Note-Some models use 2200Ω in this application. IRC replacement BT-2-2200.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MONITOR PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
26	2700Ω	3.0Ω	230Ω	.4Ω	1300	A-3876*	T22S45*		*Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MONITOR PART No.	JENSEN PART No.		
	FOLDER	VC IMP.				
27	PM	3.0Ω	5877			
	CONE DIA.	VC DIA.				
28	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MONITOR PART No.	MEISSNER PART No.	
29	Loop Ant.	65Ω	2.5Ω	2S186		
30	Osc. Coil		9Ω	2S184	14-1040	
31	Input IF	26Ω	26Ω	3376		

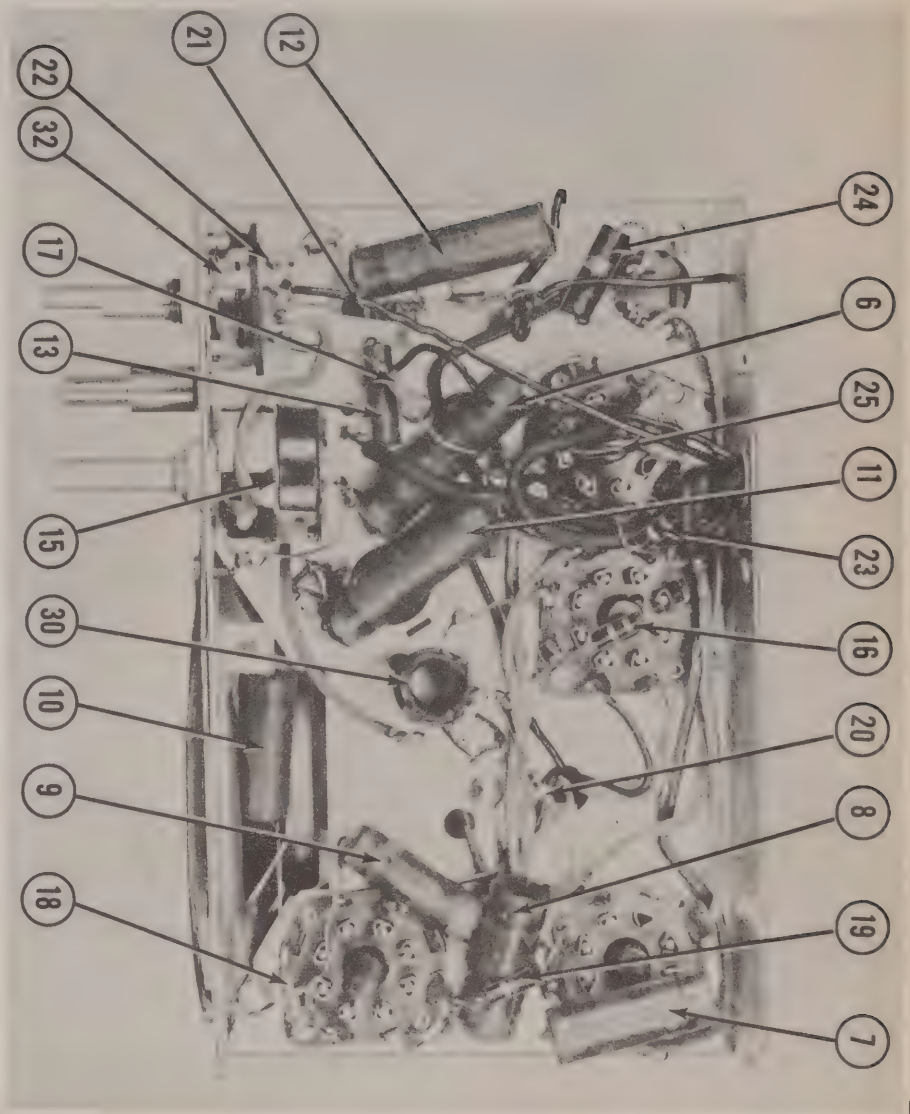
MISCELLANEOUS

ITEM No.	PART NAME	MONITOR PART No.	NOTES
32	Switch	3828	Radio-Phono
33	2 Gang Var. Cap.	1675	18-465 MMF, 27-194 MMF
	Crystal Cartridge		ASTATIC Type L-26-A

DISASSEMBLY INSTRUCTIONS

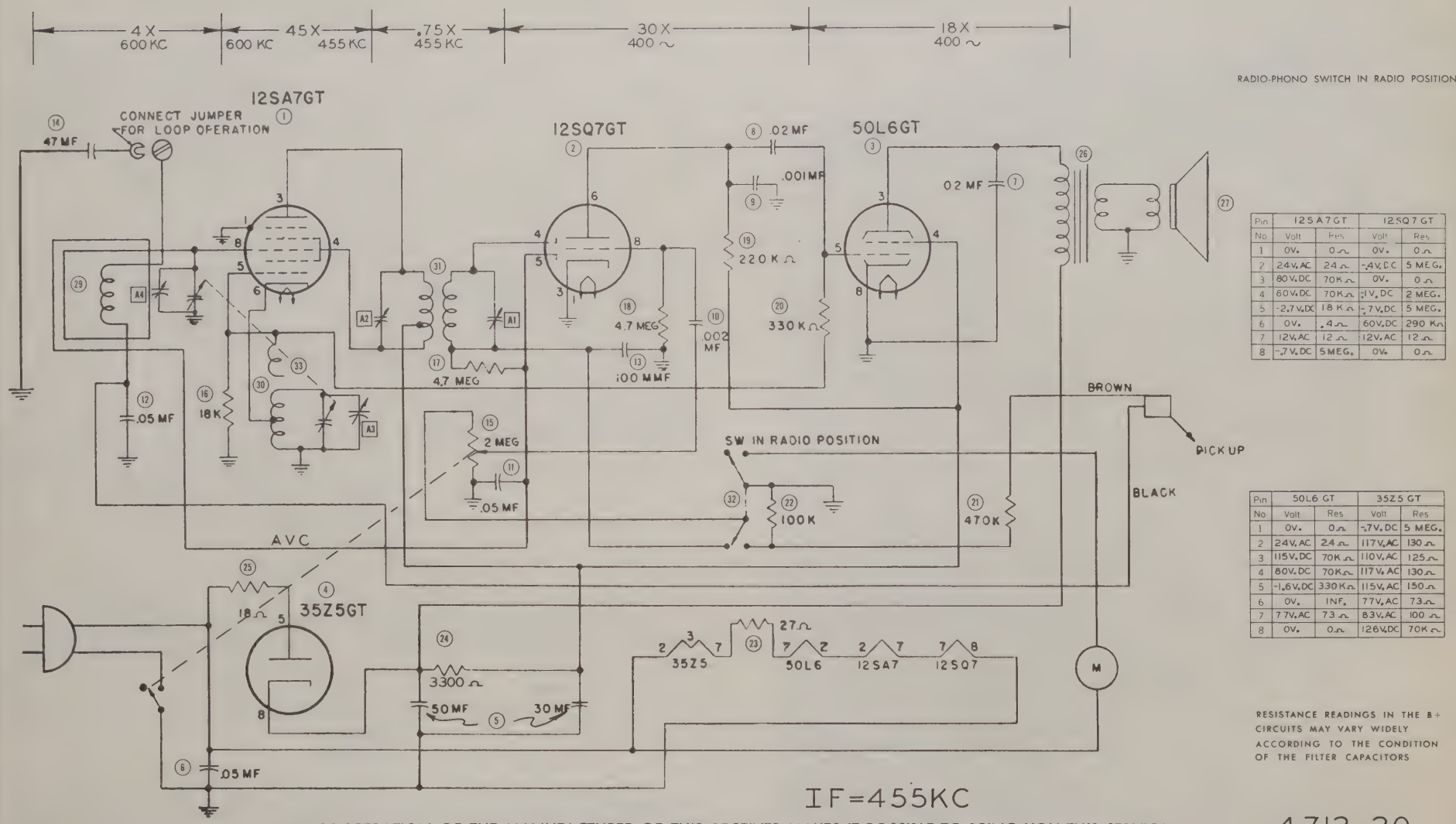
1. Remove two push on type control knobs.
2. Loosen set screw and remove dial pointer.
3. Remove four tacks holding cover board on back of cabinet.
4. Remove three hex head screws holding chassis in cabinet.
5. Remove three wood screws holding phono unit in cabinet. Lift phono unit up so chassis may be moved into position where leads can be unsoldered.
6. Unsolder phono-motor leads.
7. Unsolder phono-pickup leads.
8. Remove chassis from cabinet.

CHASSIS—BOTTOM VIEW



MONITOR MODEL M-403

MONITOR MODEL M-403



Pin No	12SA7GT Volt	12SA7GT Res	12SQ7GT Volt	12SQ7GT Res
1	0V.	0 Ω	0V.	0 Ω
2	24V. AC	24 Ω	-.4V. DC	5 MEG.
3	80V. DC	70K Ω	0V.	0 Ω
4	60V. DC	70K Ω	-.1V. DC	2 MEG.
5	-2.7V. DC	18 K Ω	-.7V. DC	5 MEG.
6	0V.	.4 Ω	60V. DC	290 KΩ
7	12V. AC	12 Ω	12V. AC	12 Ω
8	-.7V. DC	5 MEG.	0V.	0 Ω

Pin No	50L6 GT Volt	50L6 GT Res	35Z5 GT Volt	35Z5 GT Res
1	0V.	0 Ω	-.7V. DC	5 MEG.
2	24V. AC	24 Ω	117V. AC	130 Ω
3	115V. DC	70K Ω	110V. AC	125 Ω
4	80V. DC	70K Ω	117V. AC	130 Ω
5	-1.6V. DC	330 KΩ	115V. AC	150 Ω
6	0V.	INF.	77V. AC	73 Ω
7	77V. AC	73 Ω	83V. AC	100 Ω
8	0V.	0 Ω	126V. DC	70K Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4 712-20

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

OLYMPIC MODEL 6-604W

TRADE NAME	Olympic, Models 6-604W-110, 6-604W-150, 6-604W-220, 6-604V-110, 6-604V-220
MANUFACTURER	Olympic Radio & Television, Inc., 34-01 38th Ave., Long Island City 1, N.Y.
TYPE SET	AC-DC Operated 2 Band Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12BA6 RF Amp., 12BE6 Converter, 6SS7 IF Amp., 6SZ7 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-150-220 Volts AC — RATING .3 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1700KC — SHORT WAVE 5.7-18.4MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at left end of dial backplate. Use isolation transformer if available. If not, connect a .1 MFD. capacitor in series with low side of signal generator and chassis. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust in given order for maximum output. Then repeat in same order. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1700KC	"	1700KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	"	Tune for maximum output.	"	A6,A7.	Adjust for maximum output.
4		"	600KC	"	"	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 and 4.
5		"	18MC	SW	18MC	"	A9	Adjust for maximum output. Tune signal generator to 18.91MC. The image peak should be heard. If it is not, retune signal generator to 18MC and loosen A9 until next peak is heard. Recheck for image.
6		"	"	"	Tune for maximum output.	"	A10,A11	Rock tuning cap. and adjust for maximum output. Check calibration at 6MC. If it is off, repeat Steps 5 and 6

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PARTS LIST AND DESCRIPTIONS

OLYMPIC
MODEL 6-604 SERIES

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12BA6	12BA6	7BK	
2	Converter	12BE6	12BE6	7CH	
3	IF Amp.	6SG7	6SG7	6N	
4	Det.-AVC-AF	6SQ7	6SQ7	6Q	
5	Power Output	50B5	50B5	7BZ	
6	Rectifier	35W4	35W4	5AQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	C0111	BRD4415	2N511	DSB-305	TA-440	PRSA150-40-40	Filter - Red
B	40	150						" - "	"
C	50	25		BR502	TC29		TA-50	PRS25-50	Cath. Bypas.-Yellow
8	.05	400	RCP10W4503A	DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
9	.01	600	RCP10W6103A	DT6S1	TP410	S-6-01	TC-11	684-01	Output Plate Bypass
10	.02	600	RCP10W620?A	DT6S2	TP412	S-6-02	TC-12	684-02	Audio Coupling
11	.1	200	RCP10W2104A	DT4P1	TP428	S-4-1	TC-1	484-.1	Audio Plate Decoup.
12	.005	600	RCP10W650?A	DT6D5	TP406	S-6-005	TC-25	684-005	Audio Coupling
13	.05	400	RCP10W4503A	DT4S5	TP426	S-4-05	TC-15	484-05	RF Bypass Pwr. Supp
14	.1	400	RCP10W4104A	DT4P1	TP428	S-4-1	TC-1	484-.1	Conv. Cath. Filter
15	.05	400	RCP10W4503A	DT4S5	TP426	S-4-05	TC-15	484-05	Conv. Screen Bypass
16	.05	400	RCP10W4503A	DT4S5	TP426	S-4-05	TC-15	484-05	RF Bypass Pwr. Supp
17	.02	600	RCP10W6203A	DT6S2	TP412	S-6-02	TC-12	684-02	AVC Filter
18	.1	400	RCP10W4104A	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
19	.01	600	RCP10W6103A	DT6S1	TP410	S-6-01	TC-11	684-01	Ext. Grd. Isolation
20	.006	600	RCP10W6602A	DT6D6	TP409	S-6-006	TC-26	684-006	Ext. Ant. Isolation
21	220	500	RCM20A221M	5W5T2	MC237	MO.5-322	1FM-32	1468-0002	Tone Compensation
22	220	500	RCM20A221M	5W5T2	MC237	MO.5-322	1FM-32	1468-0002	Audio Plate Bypass
23	47	500	RCM20A470M	5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	IF Bypass Vol. Cont
24	47	500	RCM20A470M	5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	IF Coupling
25	47	500	RCM20A470M	5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	Osc. Grid Capacitor
26	2700	500	RCM30B272J						Fixed Padder
27	22	500	RCM20A220M	5W5Q25	MC220	MO.5-422	1FM-425	1468-000025	RF Pri. Shunt
28	100	500	RCM20A101M	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling

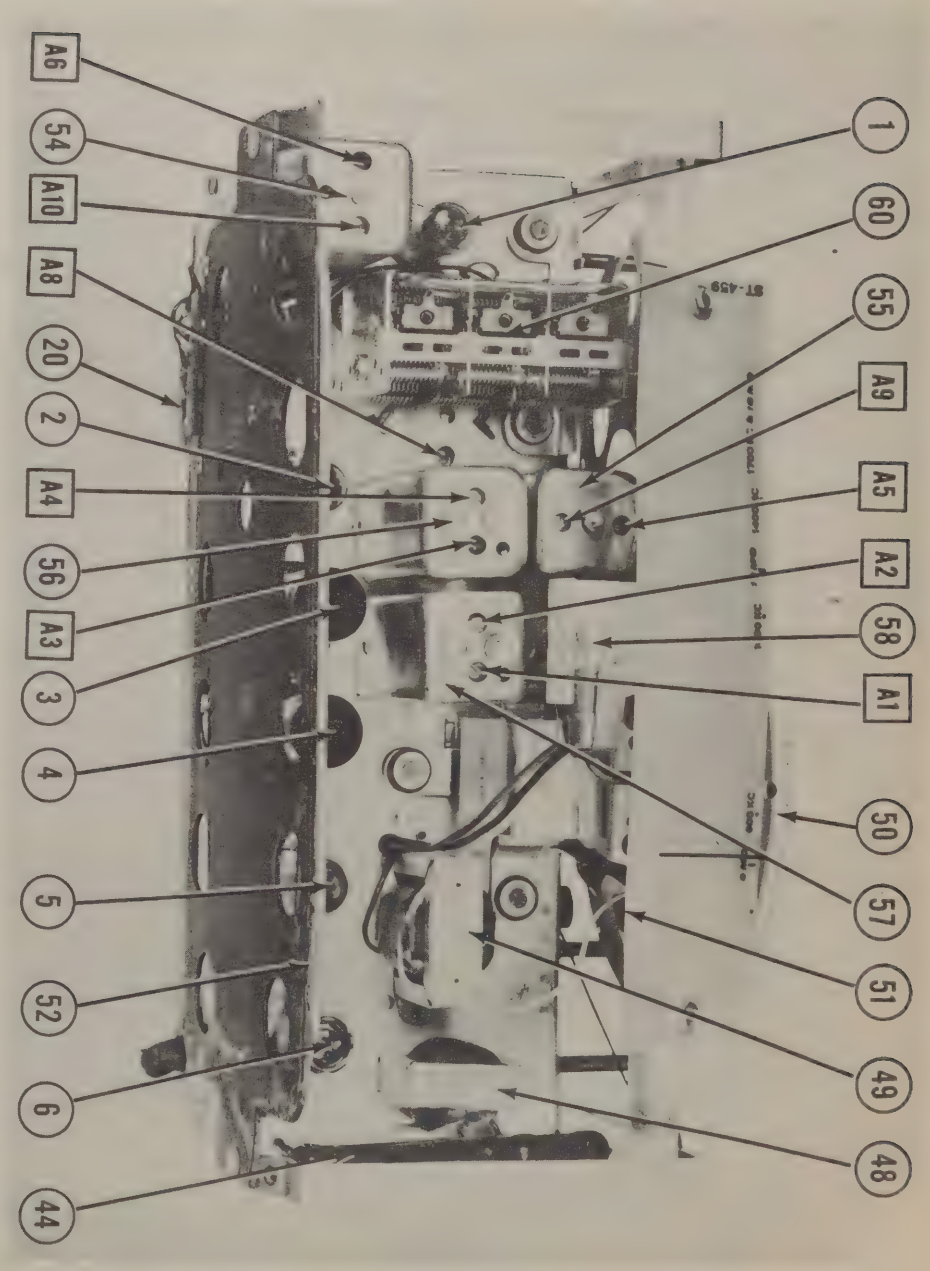
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
29A	2 Meg.	1	PT-105	MK403	D13-139	AM-66-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 29A per instructions
30A	500KΩ	1	PT-106	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 30A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	IDENTIFICATION CODES
31	150KΩ	½	REB154M	BTS-150K	Br.-Grn.-Yl. Line Isolation
32	2.2 Meg.	½	REB225M	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
33	68Ω	½		BW-½-68	Blue-Gray-Blk. Parasitic Suppressor-See Note 1
34	2.2KΩ	½	REB222M	BTS-2.2K	Red-Red-Or. Oscillator Grid
35	330Ω	½	REB331M	BW-½-330	Or.-Or.-Br. Converter Decoupling
36	2.2 Meg.	½	REB225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
37	470KΩ	½	REB474M	BTS-470K	Yl.-Vl.-Yl. Diode Filter
38	10 Meg.	½	REB106M	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
39	100KΩ	½	REB104M	BTS-100K	Br.-Blk.-Yl. AF Plate Decoupling
40	470KΩ	½	REB474M	BTS-470K	Yl.-Vl.-Yl. Output Grid
41	180Ω	½	REB181K	BW-½-180	Br.-Gray-Br. Output Cathode
42	1 Meg.	½	REB105M	BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
43	100Ω	2	RED101M	BW-2-100	Br.-Blk.-Br. Pilot Light Shunt
44A	820Ω	30	RE804		Line Dropping-See Note 2
B	360Ω	5			" " " " "
45	200Ω	10	RE802	AB-200	" " " " 3

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	OLYMPIC PART No.	IRC PART No.	
46	33Ω	1	REC330K	BW-1-33	Or.-Or.-Blk. " " " " 3
47	220Ω	½		BW-½-220	Red-Red-Br. IF Cathode-See Note 4

Note 1 - Some models use 22Ω in this application. IRC replacement BW-½-22.
Note 2 - Used in Model 6-604-220 only.
Note 3 - Used in Model 6-604-150 only.
Note 4 - Not used in all models.

FILTER CHOKE

ITEM NO	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ν)	OLYMPIC PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
48	.08A	145Ω	2 Henries	CK-114	C-2303#	T20C53#	#Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLYMPIC PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
49	2000Ω	3.8Ω	165Ω	.7Ω	Part of SK-114	A-3270*	T22545*		*Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	OLYMPIC PART No.	JENSEN PART No.		
50	EM	3.2Ω	SK-115	ST-108† Mod. P6-X		†Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
51	6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	OLYMPIC PART No.	MEISSNER PART No.	
52A	BC Loop Ant.		.6Ω	LP213		Items 52A & 52B are wound on same form.
52B	BSW " "		.3Ω			
53A	BC Loop Load Coil		1.5Ω	CL211		Items 53A & 53B are wound on same form.
53B	BSW Loop Load Coil		0Ω			
54A	BC RF Coil	2.7Ω	35Ω	CL224		Items 54A & 54B are in same can.
54B	BSW RF Coil	.1Ω	6Ω			
55A	BC Osc.Coil	.5Ω	5Ω	CL212		Items 55A & 55B are in same can.
55B	BSW Osc.Coil	0Ω	0Ω			
56	Input IF	24Ω	20Ω	TR118	16-6658	
57	Output IF	24Ω	20Ω	TR118	16-6660	

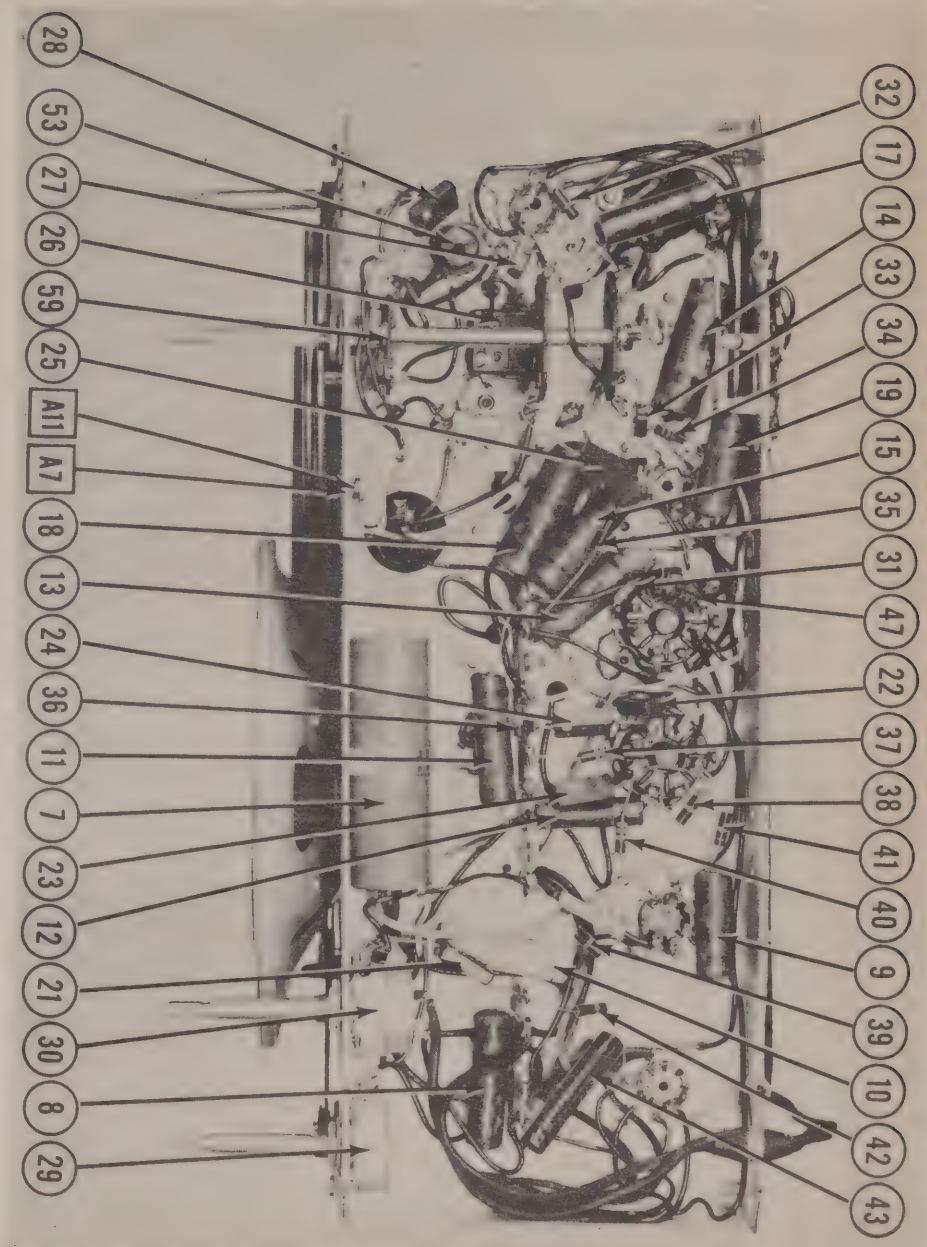
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					OLYMPIC PART No.		
58	Bayonet	6-8	0.15	Brown	DL-7		Type 47

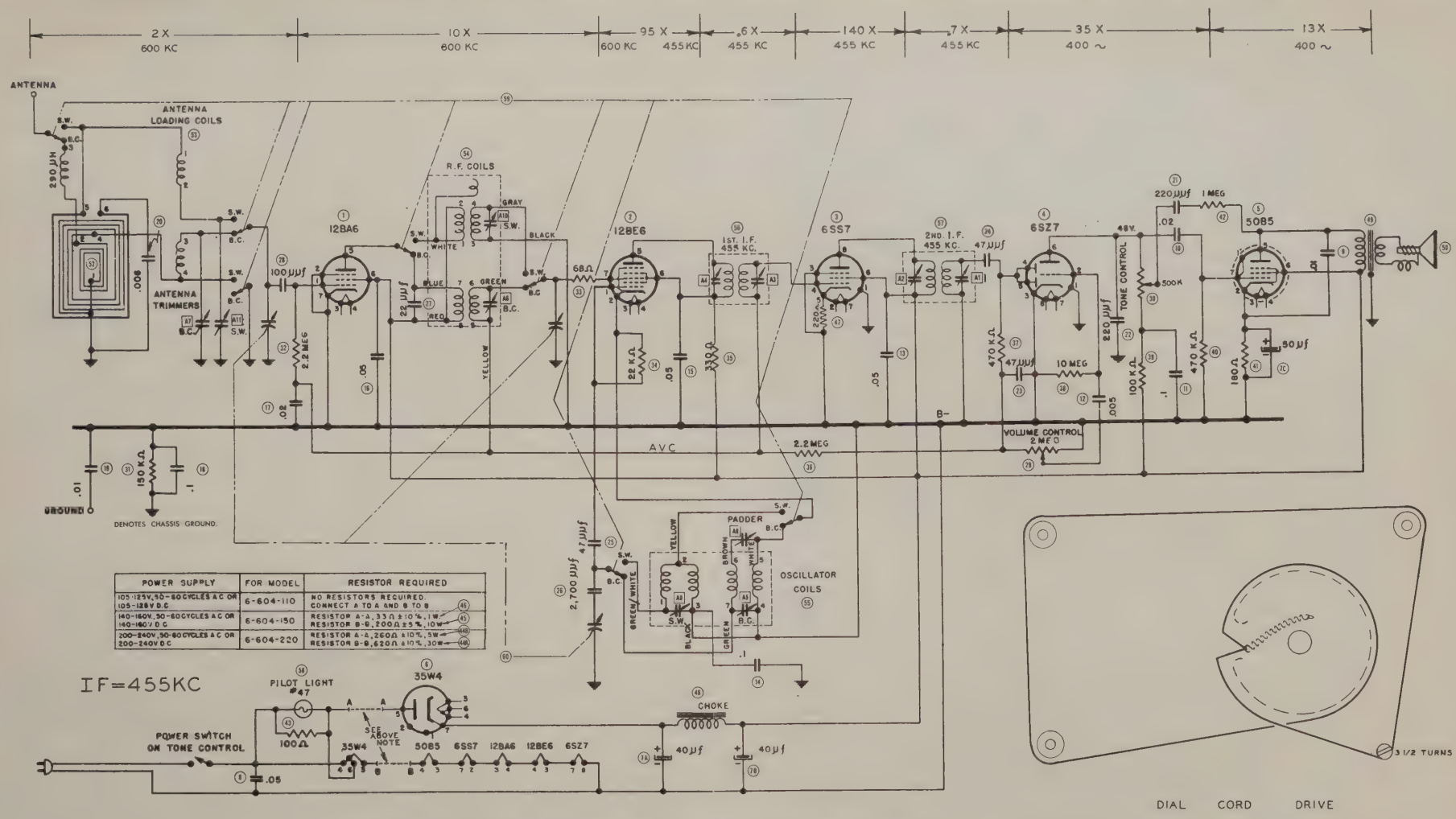
MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
59	Bandswitch	SA-112	3 Wafer - 2 Position
60	3 Gang Var. Cap.	CV-144	17-518 MMF (each section)
A6	Trimmer	CT-440	BC Osc. Padder
A7, A11	Dual Trimmer	CT-309	BC Ant. Adjustment SW Ant. Adjustment
	Cabinet	CA-154W	Walnut
	"	CA-154V	Ivory
	Dial Scale	DL-454	Glass
	Dial Pointer	PO-284	

CHASSIS—BOTTOM VIEW



OLYMPIC MODEL 6-604 SERIES



POWER SUPPLY	FOR MODEL	RESISTOR REQUIRED
105-125V, 50-60 CYCLES A.C. OR 105-125V D.C.	6-604-110	NO RESISTORS REQUIRED. CONNECT A TO A AND B TO B
140-160V, 50-60 CYCLES A.C. OR 140-160V D.C.	6-604-150	RESISTOR A-A, 33Ω ±10%, 1W — RESISTOR B-B, 200Ω ±5%, 10W
200-240V, 50-60 CYCLES A.C. OR 200-240V D.C.	6-604-220	RESISTOR A-A, 260Ω ±10%, 5W — RESISTOR B-B, 620Ω ±10%, 30W

NOTE: RESISTANCE & VOLTAGE READINGS TAKEN WITH LINE DROPPING RESISTORS SHORTED FOR 117V. OPERATION

VOLTAGE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	12BA6	-4V. DC	0V.	32V. AC	18V. AC	102V. DC	103V. DC	0V.	
2	12BE6	-4.6V. DC	0V.	6V. AC	18V. AC	98V. DC	98V. DC	-4 V. DC	
3	6SS7	0V.	32V. AC	0V.	-4V. DC	2.3V. DC	103V. DC	38V. AC	103V. DC
4	6SZ7	0V.	-6V. DC	0V.	-6V. DC	-6V. DC	43V. DC	6V. AC	0V.
5	5085	0V.	7 V. DC	38V. AC	87V. AC	98V. DC	103V. DC	0V.	
6	35W4	0V.	0V.	87V. AC	117V. AC	112V. AC	112V. AC	116V. DC	

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	12BA6	6 MEG.	0Ω	27Ω	17Ω	100KΩ	100KΩ	0Ω	
2	12BE6	22KΩ	.6Ω	6Ω	17Ω	100KΩ	100KΩ	4 MEG.	
3	6SS7	145KΩ	27Ω	0Ω	4 MEG.	200Ω	100KΩ	35Ω	100KΩ
4	6SZ7	145KΩ	10 MEG.	0Ω	2.3MEG.	2.3MEG.	700KΩ	6Ω	0Ω
5	5085	450KΩ	180Ω	35Ω	78Ω	100KΩ	100KΩ	450KΩ	
6	35W4	INF.	INF.	78Ω	107Ω	103Ω	103Ω	100KΩ	

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4712-21

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

PACKARD-BELL
MODEL 572

PACKARD-BELL
MODEL 572

PACKARD-BELL MODEL 572

TRADE NAME	Packard-Bell, Model 572
MANUFACTURER	Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles, Calif.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1650KC RATING .235 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to large stator of tuning cap. Low side to B-.	455KC	Tuning cap. open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	1600KC	1600KC	"	A5	Adjust for maximum output.
3	200MMFD	High side to ext. ant. clip. Low side to ext. ground lug.	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

PACKARD-BELL
MODEL

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150		E2422150	3N533			PRSA150-40-30/25-20 PRS150-20	Filter - Red " - Green " - Orange
B	20	150							
C	20	150							
D	20	25			TC45				Cath. Bypass-Blue
7	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
8	.2	200		DT4P2	TP429	S-4-2	TC-2	484-.2	Line Isolation
9	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Output Plate Bypass
10	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
11	.001	600		DT6D1	TP404	S-6-001	TC-21	684-001	Audio Plate Bypass
12	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
13	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	250	500		5W5T25	MC245	MO.5-325	1FM-325	1468-00025	Diode Filter
15	250	500		5W5T25	MC245	MO.5-325	1FM-325	1468-00025	Osc. Grid Capacitor
16	250	500		5W5T25	MC245	MO.5-325	1FM-325	1468-00025	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 17A per instructions " " " " "
C	Switch			M26	41	SW-A	

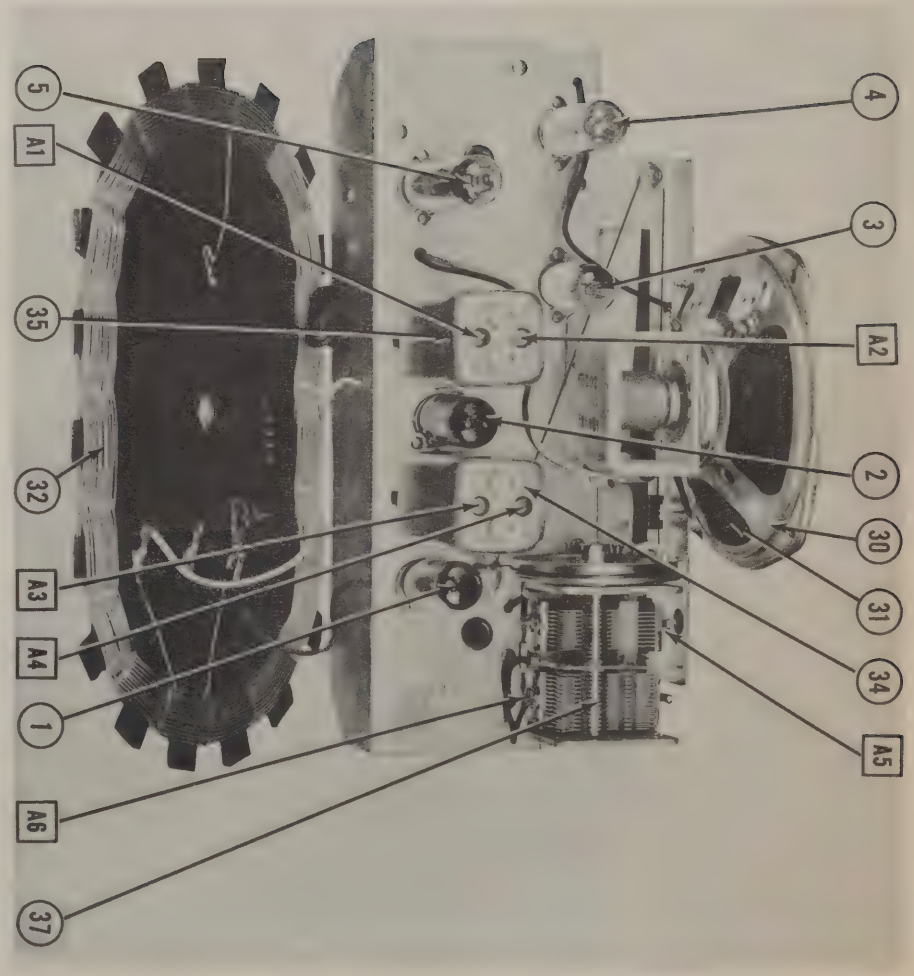
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
18	220KΩ	½		BTS-220K	Red-Red-Yl. Converter Grid
19	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
20	220Ω	½		BW-½-220	Red-Red-Br. IF Cathode
21	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
23	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
24	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
26	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
27	180Ω	1		BW-1-180	Br.-Gray-Br. Filter
28	560Ω	1		BTA-560	Grn.-Blue-Br. Pilot Light Shunt

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
29	4700Ω	3.2Ω	600Ω	.56Ω	89401B	A-3877	T22S46		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: PACKARD-BELL PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
30	PM	3.2Ω	83202	Mod. P5-X		
	CONE DIA.	VC DIA.				
31	4- 5/16"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

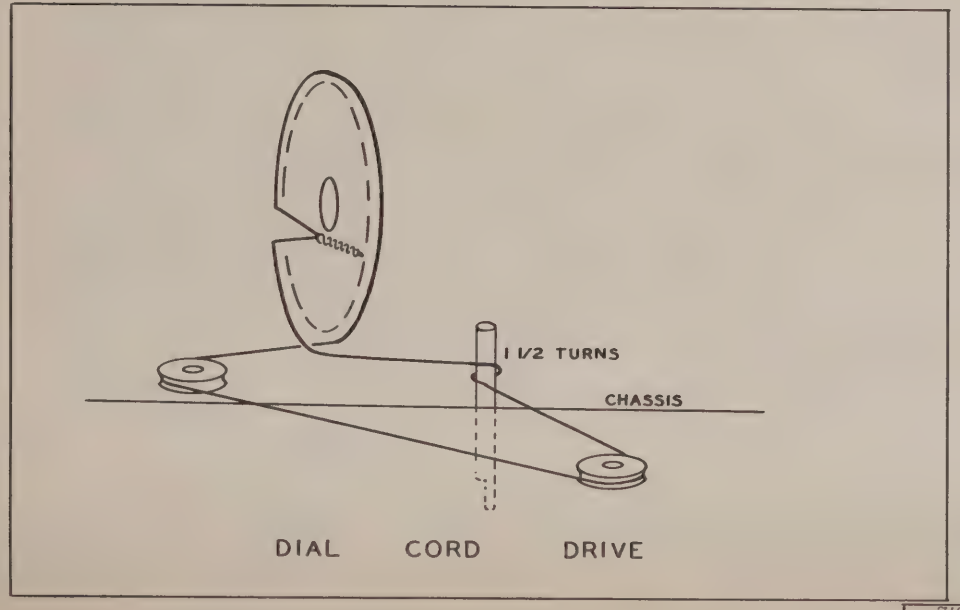
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PACKARD-BELL PART No.	MEISSNER PART No.	
32	Loop Ant.	.1Ω	1.3Ω			
33	Osc. Coil	.6Ω	5.5Ω			
34	Input IF	20Ω	20Ω	29014	16-6658	
35	Output IF	19Ω	19Ω	29015	16-6660	

DIAL LIGHT

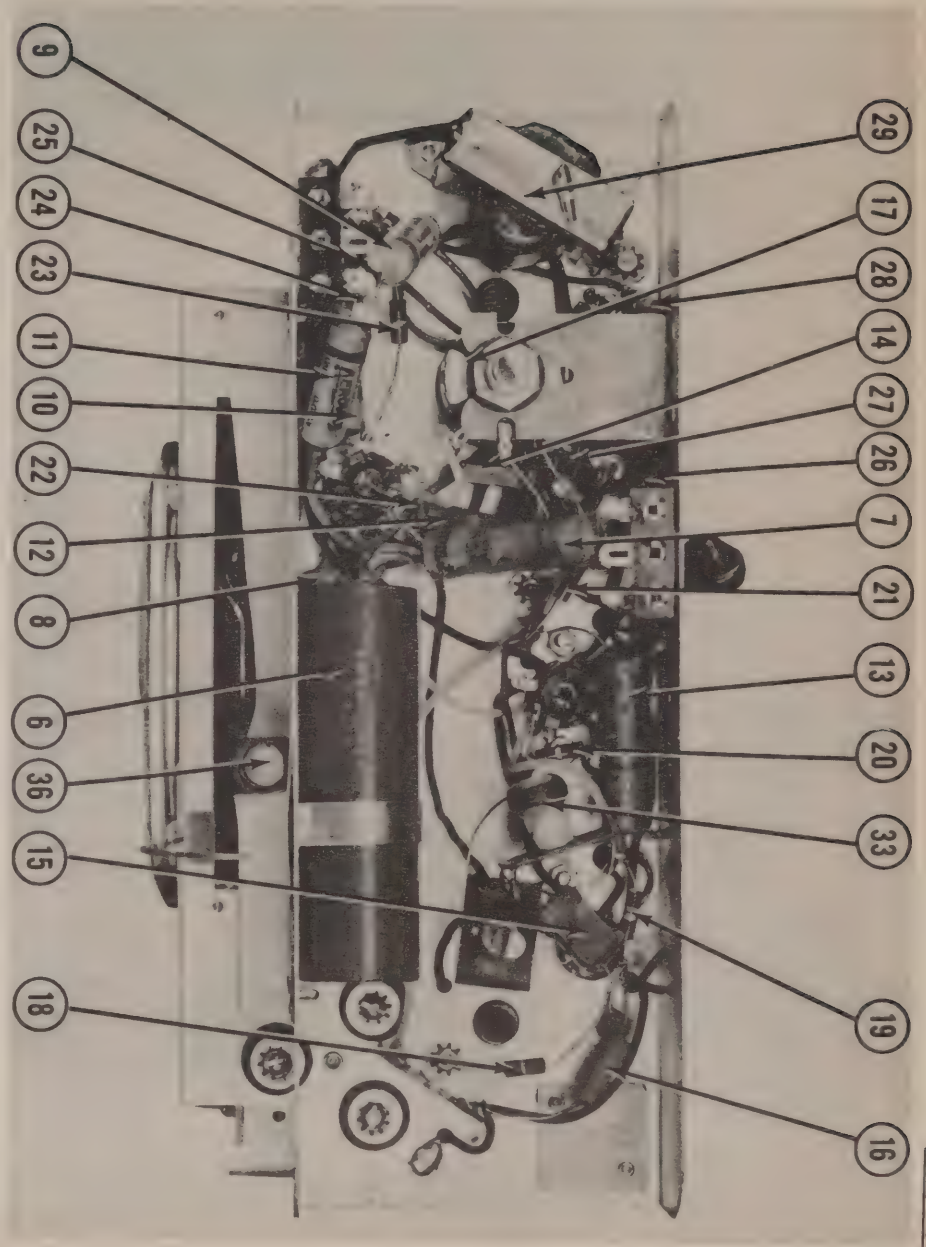
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: PACKARD-BELL PART No.		INSTALLATION NOTES
36	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

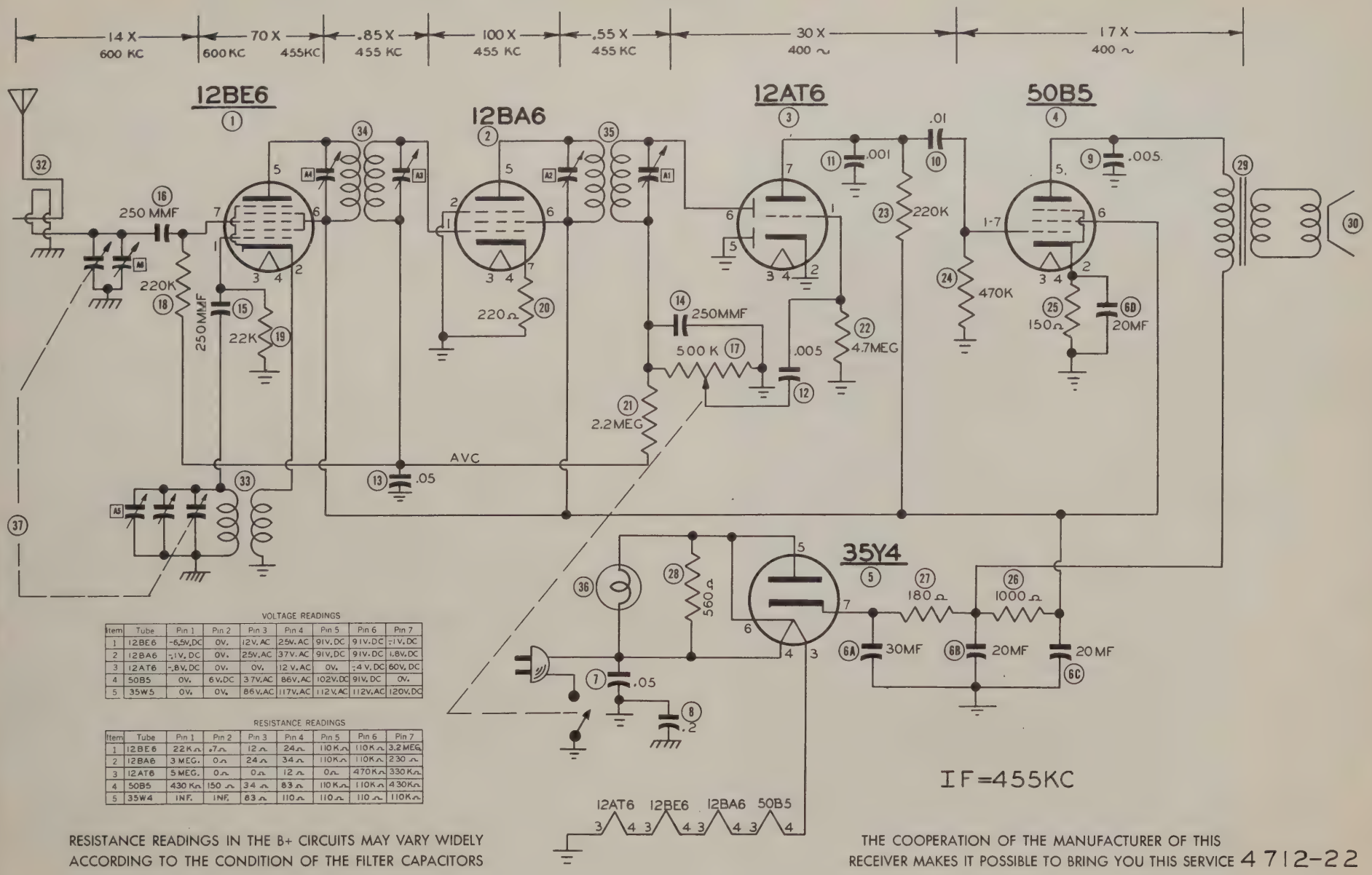
ITEM No.	PART NAME	PACKARD-BELL PART No.	NOTES
37	2 Gang Var. Cap.		28-462 MMF, 34-200 MMF



CHASSIS—BOTTOM VIEW



PACKARD-BELL MODEL 572



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-6.5V.DC	0V.	12V.AC	25V.AC	91V.DC	91V.DC	-1V.DC
2	12BA6	-1V.DC	0V.	25V.AC	37V.AC	91V.DC	91V.DC	1.8V.DC
3	12AT6	-.8V.DC	0V.	0V.	12 V.AC	0V.	-4 V.DC	60V.DC
4	50B5	0V.	6 V.DC	37V.AC	86V.AC	102V.DC	91V.DC	0V.
5	35W5	0V.	0V.	86V.AC	117V.AC	112V.AC	112V.AC	120V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	22 KΩ	470Ω	12Ω	24Ω	110 KΩ	110 KΩ	3.2 MEG.
2	12BA6	3 MEG.	0Ω	24Ω	34Ω	110 KΩ	110 KΩ	230Ω
3	12AT6	5 MEG.	0Ω	0Ω	12Ω	0Ω	470 KΩ	330 KΩ
4	50B5	430 KΩ	150Ω	34Ω	83Ω	110 KΩ	110 KΩ	430 KΩ
5	35W4	INF.	INF.	83Ω	110Ω	110Ω	110Ω	110 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE 4 7 12-22

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRADE NAME	Philco, Model 47-1230
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated FM-AM Superheterodyne Radio-Phono Combination
TUBES (NINE)	Types, 7F8 Converter, 6AG5 FM RF Amp., 6BA6 1st IF Amp., 7R7 FM 2nd IF Amp.-AM Det.-AVC, 7X7 FM Det., 7AF7 1st AF Amp.-Ph. Inv., (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-120 Volts AC — RATING .780 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1720KC — **SHORT WAVE** 9.3-15.5MC — FM 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer 2-3/16" from left edge of left dial light bracket. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. To check resonance of the FM coils in Steps 14, 15 and 16 use a tuning wand with a powdered iron slug at one end and a brass slug at the other. If inserting the iron slug in the coil increases the output, compress the turns slightly. If the brass increases the output, spread the turns slightly. When output decreases with the insertion of either end, the coil is at resonance.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to terminal "1" of ant. terminal board. Low side to chassis.	455KC	BC (1st position clockwise)	Tuning cap. fully closed	From terminal "3" of ant. terminal strip to chassis.	A1,A2, A3,A4.	Adjust for maximum output in order given. Do no repeat.
2		Loop	15MC	SW (2nd position clockwise)	8-3/8" from left edge of left dial light brkt.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Tune signal generator to 15.9lMC. The image should be heard. If it is not, retune signal generator to 15MC and loosen A5 until next peak is obtained. Adjust for maximum output and recheck for image.
3		"	"	"	Tune for maximum output.	"	A6	Rock tuning cap. and adjust for maximum output.
4							A7	Preset A7 by tightening then back off ¼ of a turn.
5		Loop	1700KC	BC	8-21/32" from left edge of left dial light brkt.	"	A8	Adjust for maximum output.
6		"	1500KC	"	Tune for maximum output.	"	A9	"
7		"	580KC	"	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 5, 6 and 7 until no further increase in output can be obtained.
8	.1 MFD.	High side to Pin 1 (grid) 6BA6 Tube (3). Low side to chassis.	9.1MC	FM (fully clockwise)	Tuning cap. fully closed	VTVM connected across cap. (12)	A10,A11 A12,A13	Adjust input signal for 10 volt meter reading. Adjust in order given for maximum deflection. Repeat until no further improvement can be made.
9	.1 MFD.	High side to Pin 8 of 7F8 Tube #1. Low side to chassis.	9.1MC	"	"	"	A14,A15	"
10	.1 MFD.	"	9.1MC	"	"	Across voice coil	A10	Adjust for minimum output.
11	DIRECT	High side to Pin 4 of FM Ant. receptacle. Low side to chassis.	105MC	"	7½" from left edge of left dial light bracket.	VTVM connected across cap. (12).	A16	Adjust for maximum deflection.
12	DIRECT	"	"	"	Tune for maximum deflection.	"	A17	Rock tuning cap. and adjust for maximum deflection.
13	DIRECT	"	"	"	"	"	A18	Adjust for maximum deflection.
14	DIRECT	"	92MC	"	3-13/16" from left edge of dial light bracket.	"	FM Osc. Coil (142)	Adjust for maximum meter deflection. (See pre-alignment notes.)
15	DIRECT	"	"	"	Tune for maximum deflection.	"	FM RF Coil (139)	"
16	DIRECT	"	"	"	"	"	FM Ant. Coil (138)	"
	REPEAT STEPS 11 thru 16 UNTIL NO FURTHER IMPROVEMENT CAN BE MADE.							

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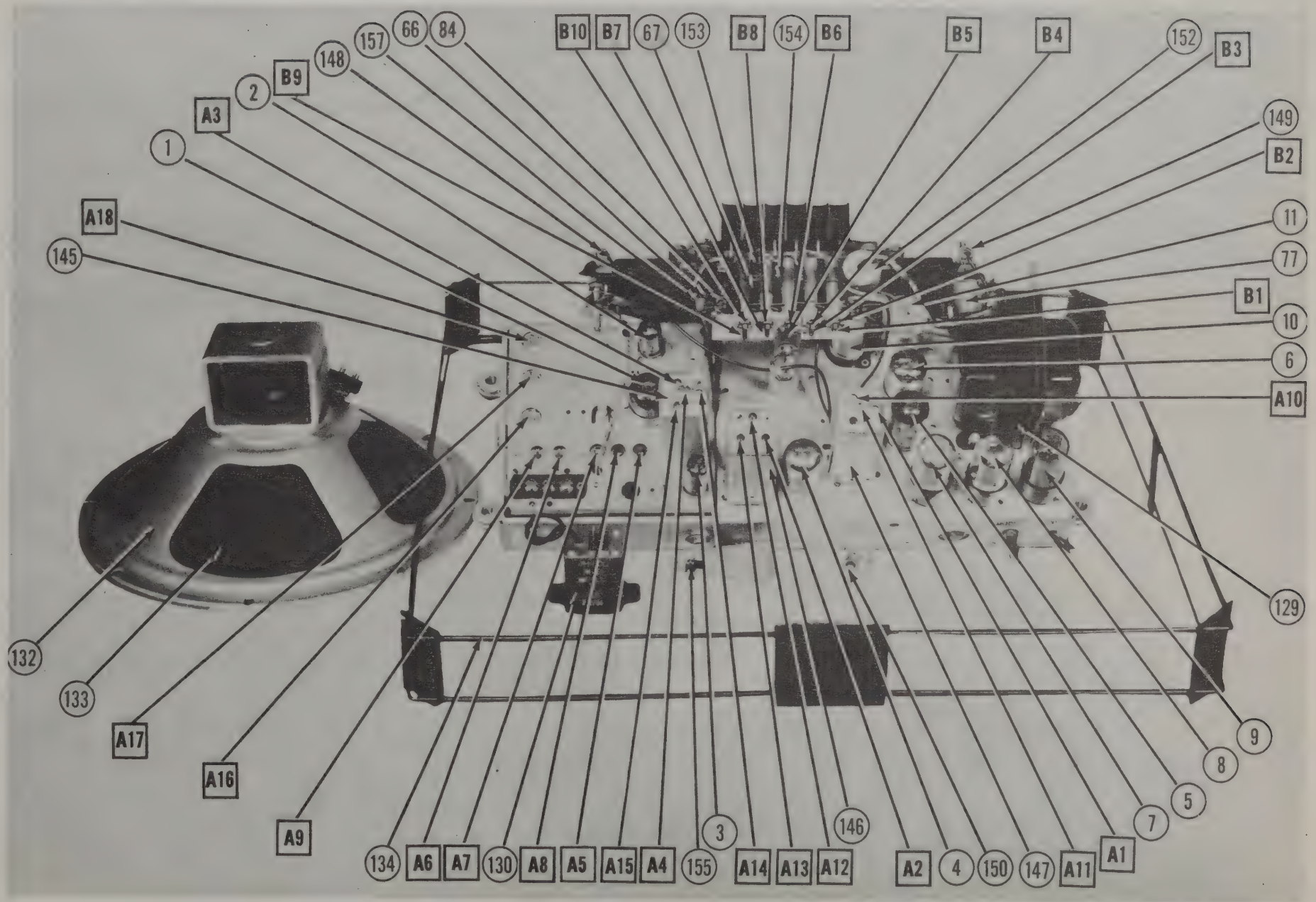
SET 22 DATE 8/47 FOLDER #4712-23

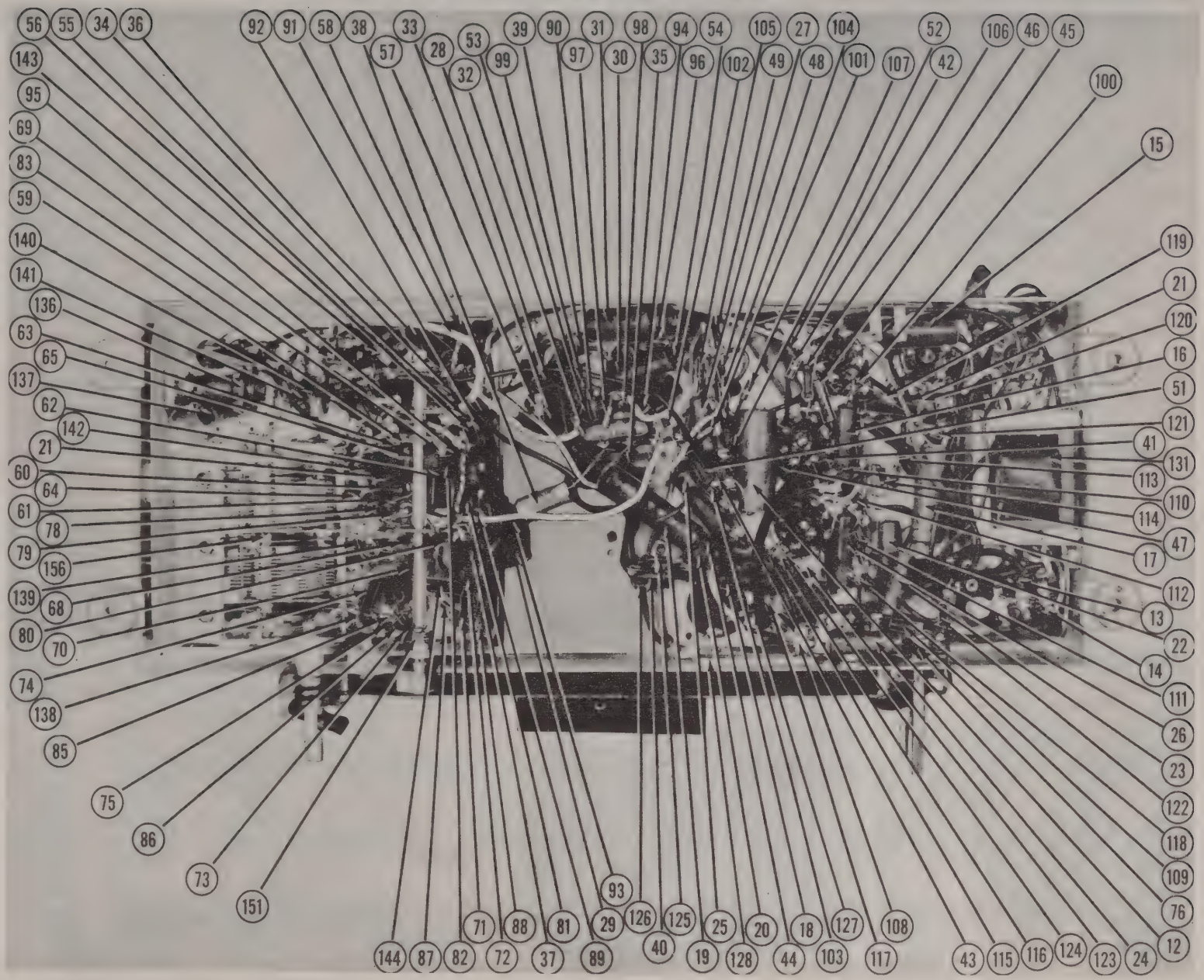
PHILCO
MODEL 47-1230

PHILCO
MODEL 47-1230 PAGE 1

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	7F8	7F8	8BW	
2	FM RF Amp.	6AG5	6AG5	7BD	
3	1st IF Amp.	6BA6	6BA6	7BK	
4	FM 2nd IF, AM Det.-AVC	7R7	7R7	8AE	
5	FM Det.	7X7	7X7	8BZ	
6	1st Audio-Ph. Inv.	7AF7	7AF7	8AC	
7	Power Output	6V6GT	6V6GT	7AC	
8	" "	6V6GT	6V6GT	7AC	
9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10	20	450	30-2555	UP2045	FP144	DY-20-450	EL-2	AF4J	Filter
11A	25	450	30-2570-11	UP7DJ54+		DY-2x30-450		AF44J4A§	Filter
B	25	450							"
12	5	50	30-2417	BR550	TC40	M-4-150	UT-41	PRS150-4	Ratio Det. Bias
13	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	Line Filter
14	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	" "
15	.003	1000	61-0117	MD16D3	TP457	TM-10-003	TR-23	1084-003	Output Plate Bypass
16	.006	400	45-3500-7	DT6D6	TP409	S-6-006	TC-26	484-006	Audio Coupling
17	.2	400	45-3500-3	DT4P2	TP429	S-4-2	TC-2	484-2	Bias Filter
18	.001	600	45-3500-5	DT6D1	TP404	S-6-001	TC-21	484-01	Tone Compensation
19	.2	400	45-3500-3	DT4P2	TP429	S-4-2	TC-2	484-.2	Audio Plate Decoup.
20	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
21	.006	400	45-3500-7	DT6D6	TP409	S-6-006	TC-26	484-006	Audio Coupling
22	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
23	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	" "
24	.006	600	45-3500-7	DT6D6	TP409	S-6-006	TC-26	684-006	Audio Coupling
25	.006	600	45-3500-7	DT6D6	TP409	S-6-006	TC-26	684-006	" "
26	.006	600	45-3500-7	DT6D6	TP409	S-6-006	TC-26	684-006	" "
27	.008	400	61-0174		TP450				De-emphasis
28	.05	400	61-0170	DT4S5	TP426	S-4-05	TC-15	484-05	7R7 Plate Decoupling
29	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	RF Bypass Pwr. Supp.
30	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	7R7 Screen Bypass
31	.05	400	61-0170	DT4S5	TP426	S-4-05	TC-15	484-05	7R7 Cath. Bypass
32	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	AVC Filter
33	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	IF Plate Decoupling
34	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	IF Screen Bypass
35	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	AVC Filter
36	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	" "
37	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	Conv. Plate Decoupling
38	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	RF Bypass Pwr. Supp.
39	100*	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" " " "
40	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Tone Compensation
41	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Audio Plate Bypass
42	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Tone Compensation
43	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
44	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
45	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	FM Det. Fil. Bypass
46	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" " " "
47	6		30-1224-9						Ratio Det. Neutrl.Cer.
48	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Filter
49	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
50	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
51	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
52	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
53	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	IF Coupling
54	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	IF Filament Bypass
55	250	500	6010255237	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	AVC Filter
56	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
57	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	IF Plate Decoup.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
110	10 Meg.	½	66-6103340	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
111	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AF Plate Load
112	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. Phase Inverter Grid
113	4700Ω	½	66-2473340	BTS-4700	Yl.-V1.-Red Phase Inverter Cathode
114	47KΩ	½	66-3473340	BTS-47K	Yl.-V1.-Or. Phase Inverter Cathode
115	6800Ω	½	66-2683340	BTS-6800	Blue-Gray-Red Phono Amp. Cathode
116	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Phono Amp. Plate Load
117	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. Phono Amp. Plate Decoupling-See Note 2
118	56KΩ	½	66-3563340	BTS-56K	Grn.-Blue-Or. Phase Inverter Plate Load
119	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Output Grid
120	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Output Grid
121	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Bias Filter
122	68Ω	½	66-0683340	BW-2-68	Blue-Gray-Blk. Feedback
123	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. Tone Compensation
124	4.7 Meg.	½	66-5473340	BTS-4.7 Meg.	Yl.-V1.-Grn. Phono Amp. Grid
125	220K	½	66-4223340	BTS-220K	Red-Red-Yl. Tone Compensation
126	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Tone Compensation
127	15KΩ	2	66-3153340	BT-2-15K	Br.-Grn.-Or. Filter
128	135Ω	5	33-3435-2	ABA-150	Bias - See Note 3

Note 1-Some models use 33KΩ in this application. IRC replacement BTS-33K.
Note 2-Some models use 47KΩ in this application. IRC replacement BTS-47K.
Note 3-On IRC replacement set slider at 135Ω from one end.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	INSTALLATION NOTES
129	117V AC @ .78A	640V CT @ .108A	4.9V AC @ 1.8A	6.3V AC @ 2.9A SEC. 4 6.3V AC @ .46A	32-8248	P-4080 †	T22R32	†Drill new mounting holes.

TRANSFORMER (PHONO IMPEDANCE MATCHING)

ITEM No.	RATING: TURNS RATIO PRI. to SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	INSTALLATION NOTES
130	1 to 70	.3Ω	5700Ω	32-8256			

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	INSTALLATION NOTES
131	12000Ω CT	5.3Ω	580Ω CT	.5Ω	32-8274	A-3824	T22S56	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: JENSEN PART No.	INSTALLATION NOTES
132	FIELD RES. 680Ω	VC IMP. 5.3Ω	36-1595		
133	CONE DIA. 11½"	VC DIA. 1"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT		

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
58	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	IF Filament Bypass
59	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AVC Filter
60	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Feedback
61	100	500	6010105327	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Conv. Fil. Bypass
62	750	500	6010758301						Cathode Coupling
63	250	500	6010255237	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Osc. Feedback
64	250	500	6010255237	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	RF Coupling
65	250	500	6010255237	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Fixed Padder
66	220		30-1224-4						Osc. Feedback Cer.
67	1000		30-1224-15						" " "
68	250	500	6010255237	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Fixed Padder
69	6		30-1224-9						Neutralizing Cer.
70	33		30-1223-6						RF Coupling Cer.
71	1500	500	6020155404	1W5D15	MC456	MW.5-215	1FM-215	1467-0015	RF Plate Decoupling
72	1500	500	6020155404	1W5D15	MC456	MW.5-215	1FM-215	1467-0015	RF Bypass Pwr. Supp.
73	1500	500	6020155404	1W5D15	MC456	MW.5-215	1FM-215	1467-0015	RF Screen Bypass
74	100	500	6010105237	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Filament Bypass
75	100	500	6010105237	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Cath. Bypass

§ Omit bypass section. ‡ Parallel sections for desired capacity.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
76A	2 Meg.	1	33-5535-1	TM25G	D1G-139X		Volume Control
B	Shaft		Not Req.	Not Req.	A		Attach to 76A per Instructions
77	6 Meg.	1	33-5538-1				Tone Control & Switch

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
78	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. Mixer Grid
79	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. AVC Network
80	1500Ω	½	66-2153340	BTS-1500	Br.-Grn.-Red Mixer Cathode
81	15KΩ	½	66-3153340	BTS-15K	Br.-Grn.-Or. Oscillator Grid
82	27KΩ	½	66-3273340	BTS-27K	Red-Vi.-Or. Oscillator Plate Load-See Note 1
83	4700Ω	½	66-2473340	BTS-4700	Yl.-Vi.-Red " " "
84	6800Ω	½	66-2683340	BTS-6800	Blue-Gray-Red Oscillator Cathode
85	10Ω	½	66-0103340	BW-½-10	Br.-Blk.-Blk. FM RF Grid
86	150Ω	½	66-1153340	BW-½-150	Br.-Grn.-Br. FM RF Cathode
87	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. FM RF Screen Dropping
88	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red FM RF Plate Decoupling
89	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Mixer Plate Decoupling
90	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
91	68Ω	½	66-0683340	BW-½-68	Blue-Gray-Blk. 1st IF Cathode
92	27KΩ	½	66-3273340	BTS-27K	Red-Vi.-Or. 1st IF Screen Dropping
93	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red 1st IF Plate Decoupling
94	3.3 Meg.	½	66-5333340	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
95	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. " "
96	150Ω	½	66-1153340	BW-½-150	Br.-Grn.-Br. 2nd IF Cathode
97	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. 2nd IF Screen Dropping
98	820KΩ	½	66-4823340	BTS-820K	Gray-Red-Yl. AVC Network
99	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AVC Network
100	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red 2nd IF Plate Decoupling
101	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
102	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Diode Load
103	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Audio Decoupling
104	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. De-emphasis
105	6.8 Meg.	½	66-5683340	BTS-6.8 Meg.	Blue-Gray-Grn. Discriminator Load
106	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Discriminator Bias Network
107	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Series Test Jack
108	33KΩ	½	66-3333340	BTS-33K	Or.-Or.-Or. Tone Compensation
109	4.7Ω	½	66-9473340	BW-½-4.7	Yl.-Vi.-Gold Feedback

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
134	Loop Ant.		.1Ω	76-1989		
135	FM Ant.					
136	BC Ant.Coil		2Ω	32-4033-2		
137	SW Ant.Coil		.1Ω	32-4050-6		
138	FM Ant.Coil		0Ω	32-4158		
139	FM RF Coil		0Ω	32-4159		
140	BC Osc.Coil		3.5Ω	32-4019-4	14-1040	
141	SW Osc.Coil		.1Ω	32-4113		
142	FM Osc.Coil		0Ω	32-4018-2		
143	RF Choke		0Ω	32-4157		
144	" "		.1Ω	32-4061		
145A	AM Input IF	1.2Ω	20Ω	32-4146		
B	FM " "	1.2Ω	1.2Ω			
146A	AM Inter.IF	6Ω*	11Ω#	32-4156		
B	FM " "					
147A	AM Output IF	11Ω*	10Ω	32-4147		
B	FM Output IF		1Ω			
157	RF Choke		0Ω			
158	" "		0Ω			

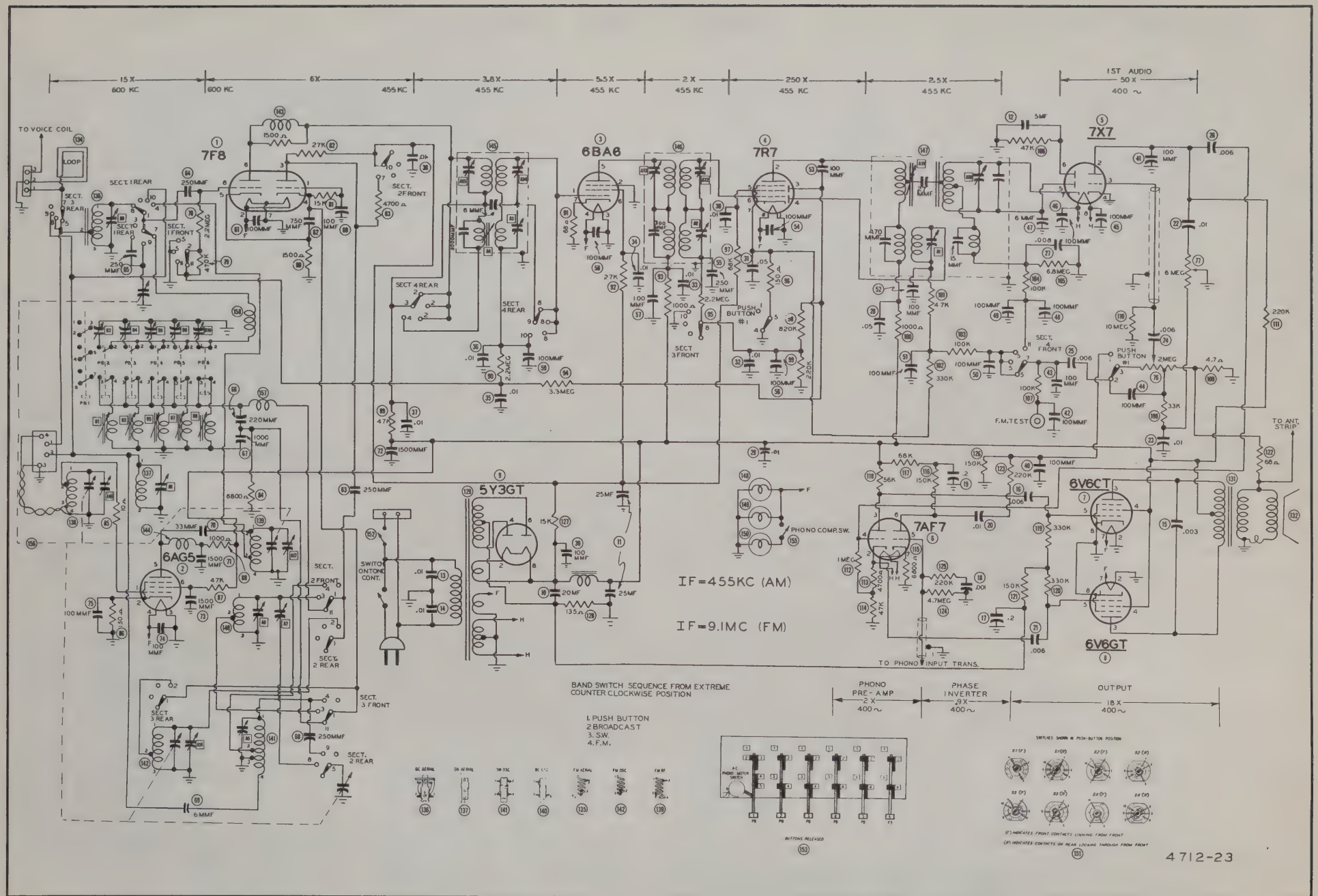
*Includes both pri.
#Includes both sec.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
148	Bayonet	7.5	0.2	White	34-2040		Type 51
149	"	"	"	"	34-2040		"
150	"	6-8	0.4	"	30-2039		Type 55

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
151	Bandswitch	42-1801	Function Selector
152	Switch	42-1756	Phono Motor
153	"		Pushbutton
154	Pushbutton Assy.		Complete-Coils, Trimmers, Etc.
155	Switch	42-1702	Phono Compartment Light
156	Tuning Cap.	31-2703-2	
A5	Trimmer Strip	31-6464	SW Osc. Adj.
A7			BC Osc. Padder
A8			BC Osc. Adj.
A6	Dual Trimmer	31-6476	SW Ant. Adj.
A9			BC Ant. Adj.
	Trimmer Strip	31-6479-1	Pushbutton Adjustments
	Dial Scale	76-2226-2	
	Pointer	56-3179	



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F8	-6.6V.DC	6.5V. AC	103V.DC	0V.	3V. DC	165V.DC	0V.	-1.5V.DC
2	6AG5	0V.	1.5V. DC	0V.	6.5V. AC	245V.DC	140V.DC	1.5V. DC	
3	6BA6	0V.	0V.	0V.	6.5V. AC	240V.DC	115V.DC	1.1V. DC	
4	7R7	0V.	245 V.DC	0V.	3 V.DC	92 V.DC	0V.	1.1V. DC	6.5V.AC
5	7X7	3.3V. AC	120V.DC	-.8V.DC	0V.	-.5V. DC	-1.2V. DC	-.5V.DC	3.3V. AC
6	7AF7	3.3V. AC	70V.DC	165V.DC	15V. DC	0V.	80V. DC	5V. DC	3.3V. AC
7	6V6 GT	0V.	6.5V. AC	240V.DC	240V.DC	-5.6V.DC	240V.DC	0V.	0V.
8	6V6 GT	0V.	6.5V. AC	240V.DC	240V.DC	-5.7V.DC	0V.	0V.	0V.
9	5Y3 GT	0V.	310V.DC	0V.	320V.AC	0V.	320V.AC	0V.	310V.DC

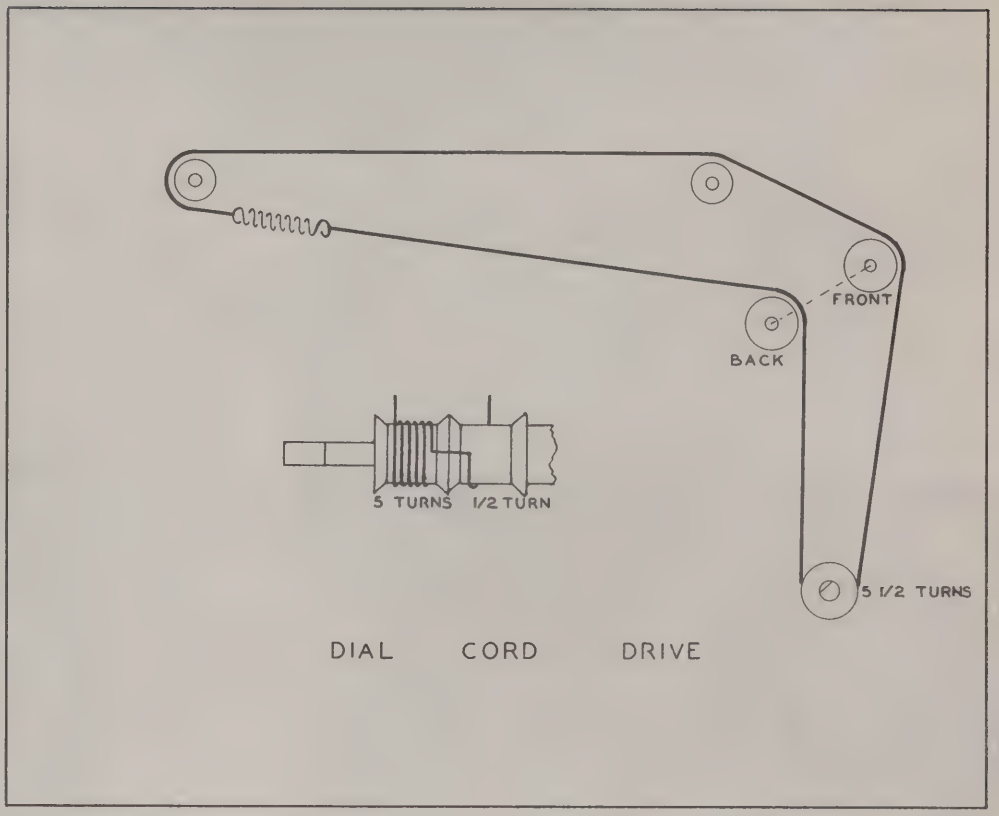
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F8	13 Kꭥ	.1ꭥ	190Kꭥ	.6ꭥ	64 Kꭥ	190 Kꭥ	0ꭥ	7 MEG.
2	6AG5	10ꭥ	150ꭥ	0ꭥ	.1ꭥ	140 Kꭥ	190 Kꭥ	150ꭥ	
3	6BA6	7 MEG.	0ꭥ	0ꭥ	.1ꭥ	140 Kꭥ	180 Kꭥ	70ꭥ	
4	7R7	0ꭥ	140 Kꭥ	1 MEG.	380 Kꭥ	220 Kꭥ	2.8MEG.	150ꭥ	.1ꭥ
5	7X7	.1ꭥ	360Kꭥ	10 MEG.	0ꭥ	* 7 MEG.	* 45 Kꭥ	* 7 MEG.	.1ꭥ
6	7AF7	.1ꭥ	53 Kꭥ	200Kꭥ	1MEG.	4 MEG.	290 Kꭥ	7 Kꭥ	.1ꭥ
7	6V6GT	INF.	.1ꭥ	140 Kꭥ	140Kꭥ	470 Kꭥ	140 Kꭥ	0ꭥ	0ꭥ
8	6V6GT	INF.	.1ꭥ	140 Kꭥ	140Kꭥ	460 Kꭥ	INF.	0ꭥ	0ꭥ
9	5Y3 GT	INF.	140 Kꭥ	INF.	190ꭥ	INF.	190ꭥ	INF.	140Kꭥ

* PINS 5,6 & 7 ON TUBE #5 (7X7) MEASURED IN F.M. POSITION

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

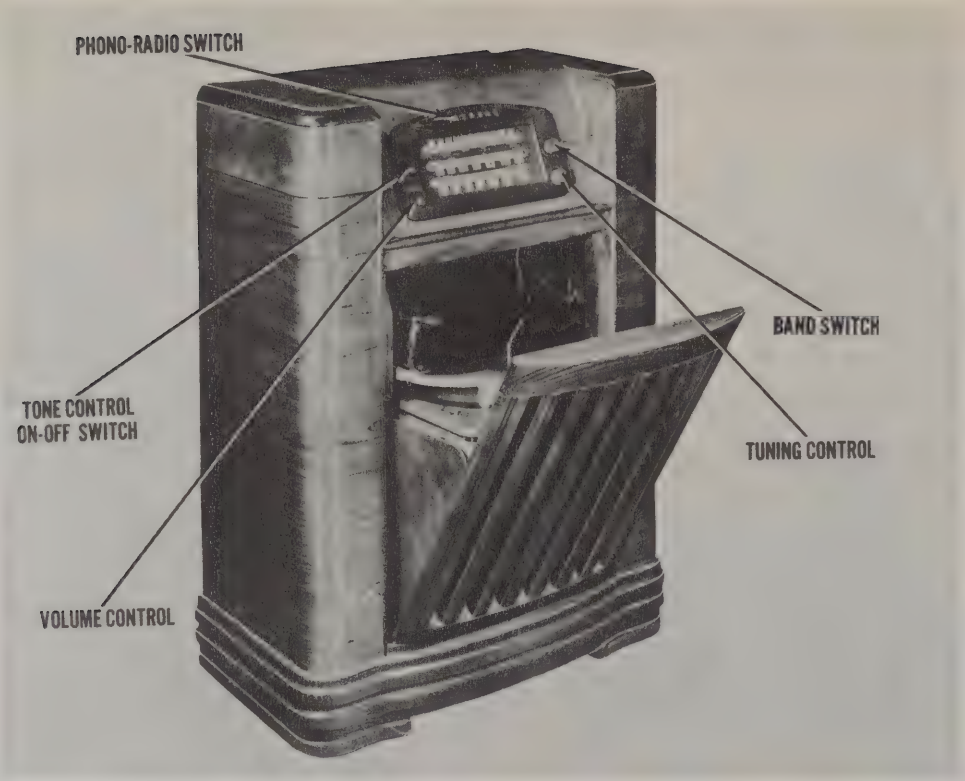
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

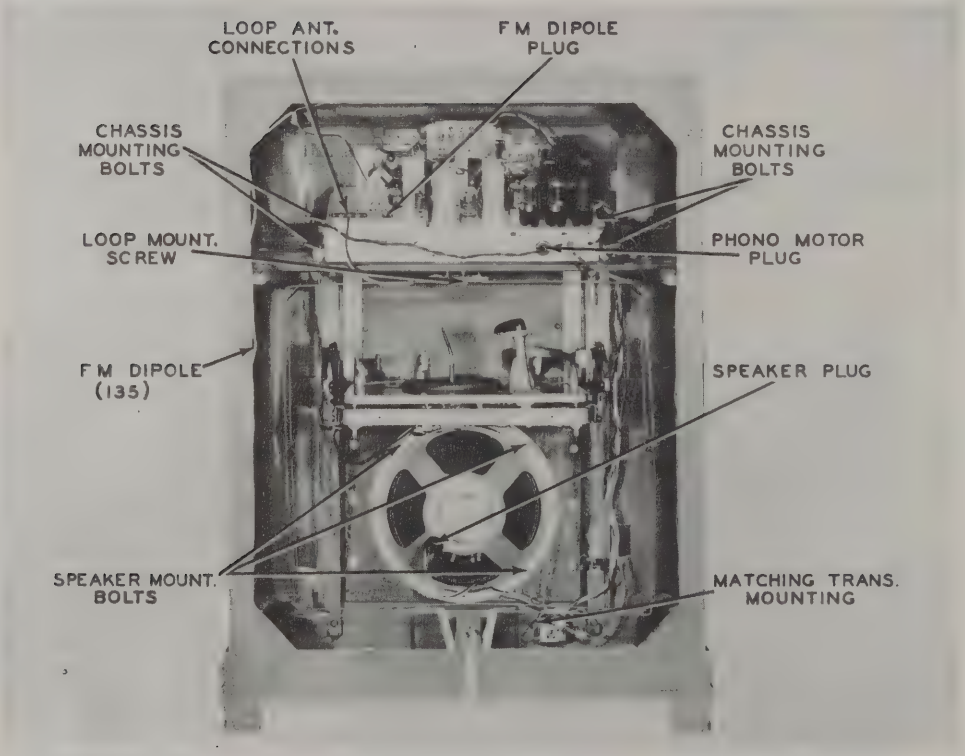


PUSHBUTTON ADJUSTMENTS

The frequency range of pushbuttons reading from left to right are as follows:
540-1000KC, 600-1200KC, 650-1300KC, 850-1500KC, 900-1600KC.

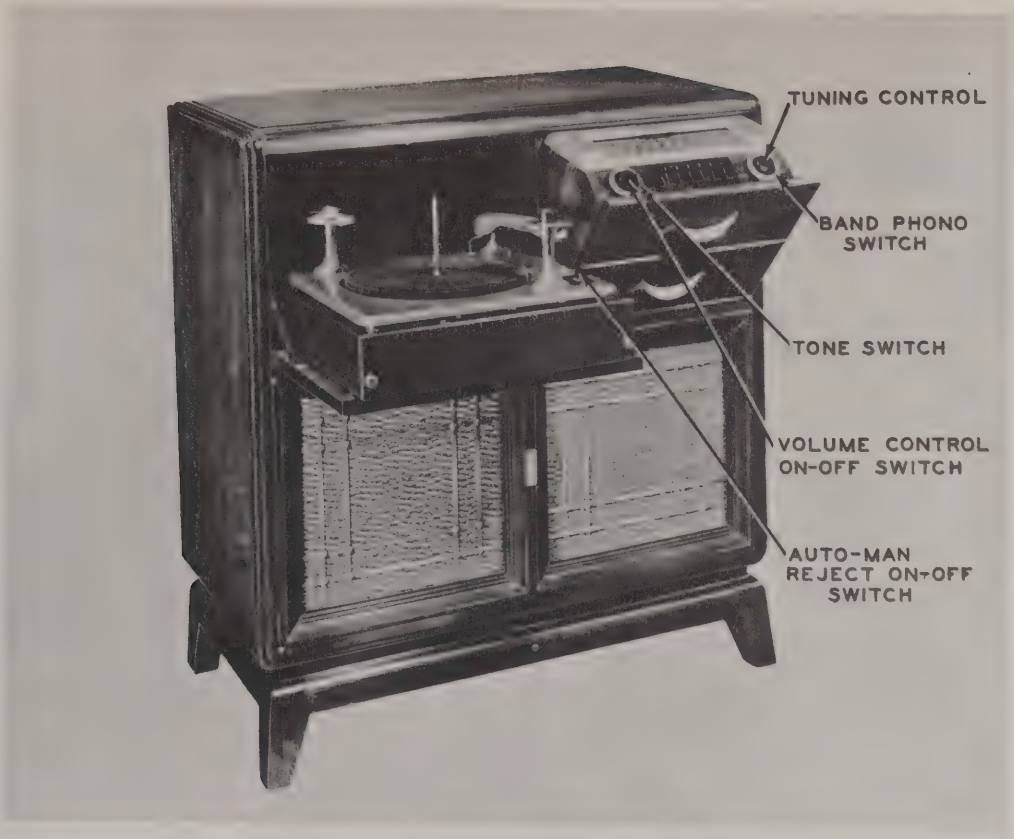
1. Turn receiver on and allow it to warm up for at least 15 minutes.
2. List five desired stations arranged in order from low to high frequencies, making certain each will fall within range of button to be used.
3. Turn band switch to pushbutton position (fully counter-clockwise), push in second button from left and adjust B1, to tune in first station on list.
4. Adjust B2 for maximum volume.
5. Follow same procedure for remaining pushbuttons, adjusting B3, B5, B7, and B9 to tune in desired stations and adjusting B4, B6, B8, and B10 for maximum volume.
6. For greater accuracy repeat all adjustments





DISASSEMBLY INSTRUCTIONS

1. Remove fourteen Phillips head screws holding cover board on back of cabinet. Remove cover board.
2. Remove four push on type control knobs.
3. Remove phono-motor plug from chassis.
4. Remove FM antenna plug from chassis.
5. Remove loop antenna leads from trimmer on chassis.
6. Remove speaker plug from speaker.
7. Remove phono-pickup plug from phono input transformer.
8. Remove power plug from phono input transformer.
9. Remove phono compartment light from bracket.
10. Remove two Phillips head screws holding pushbutton assembly solid in cabinet.
11. Remove four hex head bolts holding chassis in cabinet. Remove chassis from cabinet.
12. Remove four hex head nuts holding speaker in cabinet. Remove speaker from cabinet.
13. Remove one Phillips head screw holding loop antenna in cabinet. Remove loop from cabinet.



RCA MODEL 711V2

TRADE NAME	RCA Victor, Model 711V2 (Ch. RK-117 & RS-123)
MANUFACTURERS	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	AC Operated FM-AM Superheterodyne Radio-Phono Combination.with Loop Antenna and Pushbutton Tuning.
TUBES (ELEVEN)	Types, 6BA6 RF Amp., 6BA6 Mixer, 6BE6 Osc., 6BA6 IF Amp., 6AU6 Driver, 6AL5 FM Ratio Det., 6SQ7 AM Det.-AVC-AF, 6J5 Phase Inverter, (2) 6F6G Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	1.2 Amp. @ 117 Volts AC
TUNING RANGE	BROADCAST 540-1600KC SHORT WAVE 9.2-16.0MC FREQ. MOD. 88-108MC

PUSHBUTTON ADJUSTMENTS

Ranges of pushbuttons reading from left to right are as follows: 540-1030KC, 610-1250KC, 610-1250KC, 740-1430KC, 740-1430KC, 880-1600KC.

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Make a list of stations desired to be set up ranging from low to high frequencies.
3. Turn range switch to "A" band position and manually tune in 1st station of the list.
4. Turn range switch to pushbutton position. Push in the 1st button on left. Adjust B1 to tune in 1st station. Rotate loop for least amount of pickup and adjust B1 for maximum volume.
5. Adjust B2 for maximum volume.
6. To set up the remaining buttons follow the same procedure outlined above adjusting B3, B5, B7, B9 and B11 to tune in stations and B4, B6, B8, B10 and B12 for maximum volume.

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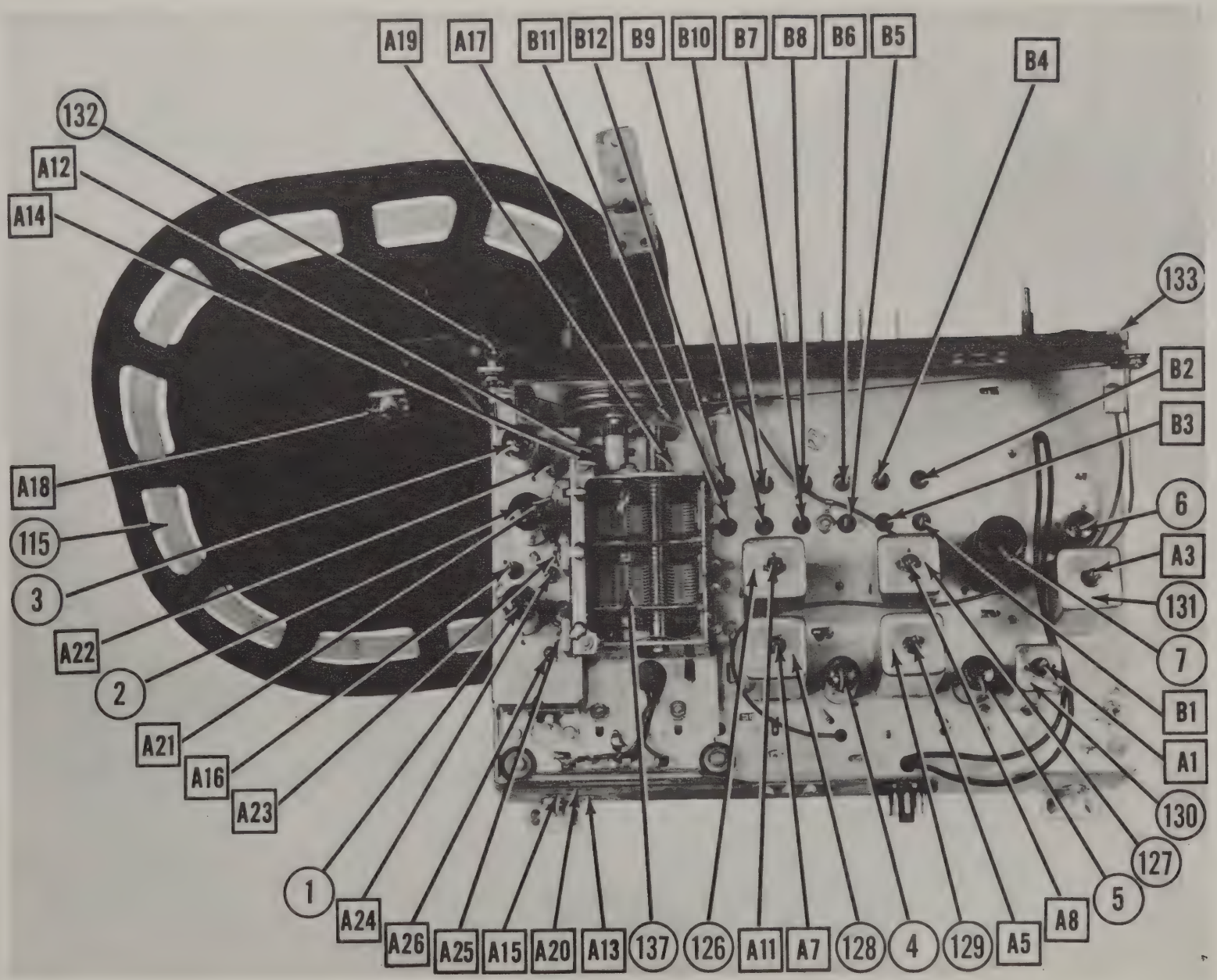
SET #22 DATE 8/47 FOLDER #4712-24

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Mixer	6BA6	6BA6	7BK	
3	Oscillator	6BE6	6BE6	7CH	
4	IF Amp.	6BA6	6BA6	7BK	
5	Driver	6AU6	6AU6	7BK	
6	FM Ratio Det.	6AL5	6AL5	6BT	
7	AM Det.-AVC-AF	6S.7	6S.7	8.	
8	Phase Inverter	6J5	6J5	6.	
9	Power Output	6F6G	6F6G	7S	
10	Power Output	6F6G	6F6G	7S	
11	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
12A	30	450	36599	UP@DJ56	FP238	DY-314		AF444J	◓ Filter 86045-7
B	15	450							■ "
C	40	25			TC29			PRS25-50	▲ Bias Filter
13	16	150	31323	BR1615	TC44	M-16-150	UT-161	PRS150-16	Filter 86011-1
14	5	50	72121	BR550	TC40	M-4-150	TA-55	PRS150-4	Ratio Det. Bias 86011-28
15	5	50	72121	BR550	TC40	M-4-150	TA-55	PRS150-4	Grid Filter 86011-28
16	.0035	1000	70646	MD16D4	TP458	TM-16-004	TR-24	1084-004	Output Plate Bypass
17	.0035	1000	70646	MD16D4	TP458	TM-16-004	TR-24	1084-004	" " "
18	.02	600	70632	DT6S2	TP412	S-6-02	TC-12	684-02	Audio Coupling
19	.02	600	70632	DT6S2	TP412	S-6-02	TC-12	684-02	" "
20	.05	200	72596	DT4S2	TP426	S-4-05	TC-15	484-05	" "
21	.001	200	72782	DT6D1	TP404	S-6-001	TC-21	484-001	Tone Compensation
22	.01	400	71925	DT4S1	TP410	S-4-01	TC-11	484-01	Audio Coupling
23	.002	400	71927	DT6D2	TP405	S-6-002	TC-21	484-002	Tone Compensation
24	.005	400	72791	DT6D5	TP408	S-6-005	TC-25	484-005	" "
25	.01	400	71923	DT4S1	TP421	S-4-01	TC-11	484-01	" "
26	.015	400	72120	DT4S15	TP400	S-4-015	TC-11	484-015	" "
27	.01	200	71923	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
28	.005	200	71926	DT6D5	TP408	S-6-005	TC-25	484-005	" "
29	.005	200	71926	DT6D5	TP408	S-6-005	TC-25	484-005	De-emphasis
30	.005	200	71926	DT6D5	TP408	S-6-005	TC-25	484-005	Ratio Det.-Load
31	.005	200	71926	DT6D5	TP408	S-6-005	TC-25	484-005	" " "
32	.005	400	71553	DT6D5	TP408	S-6-005	TC-25	484-005	IF Plate Decoupling
33	.005	400	71553	DT6D5	TP408	S-6-005	TC-25	484-005	IF Screen Bypass
34	.005	400	71553	DT6D5	TP408	S-6-005	TC-25	484-005	IF Screen Decoupling
35	.005	200	71926	DT6D5	TP408	S-6-005	TC-25	484-005	IF Grid Filter
36	.05	400	71551	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
37	.003	200	72573	DT6D3	TP406	S-6-003	TC-23	484-003	IF Plate Decoupling
38	.005	200	71926	DT6D5	TP408	S-6-005	TC-25	484-005	IF Screen Bypass
39	.01	200	71923	DT4S1	TP421	S-4-01	TC-11	484-01	AVC Filter
40	.01	400	71925	DT4S1	TP421	S-4-01	TC-11	484-01	Mixer Plate Decoup.
41	.003	200	71921	DT6D3	TP406	S-6-003	TC-23	484-003	Mixer Screen Bypass
42	.005	200	71926	DT6D5	TP408	S-6-005	TC-25	484-005	Mixer Cath. Bypass
43	.005	400	71553	DT6D5	TP408	S-6-005	TC-25	484-005	RF Plate Decoupling
44	.003	200	71921	DT6D3	TP406	S-6-003	TC-23	484-003	RF Screen Bypass
45	.005	200	71926	DT6D5	TP408	S-6-005	TC-25	484-005	AVC Filter
46	.01	400	71925	DT4S1	TP421	S-4-01	TC-11	484-01	RF Plate Decoupling
47	.01	400	71925	DT4S1	TP421	S-4-01	TC-11	484-01	Osc. Plate Decoupling
48	.01	400	71925	DT4S1	TP421	S-4-01	TC-11	484-01	Osc. Screen Feedback
49	.005	200		DT6D5	TP408	S-6-005	TC-25	484-005	Filament Bypass
50	.005	200	71926	DT6D5	TP408	S-6-005	TC-25	484-005	" " "
51	1000		71929						Ratio Det. Filter Cer.
52	3.5		72790						Feedback Cer.
53	6.8		39043						Osc. Coupling Cer.
54	220		71920						RF Coupling Cer.
55	220		71920						" " "
56	33		33111						Fixed Padder Cer.
57	100		39396						RF Coupling Cer.
58	100		39396						FM RF Coupling Cer.
59	180		71933						Osc. Screen Bypass
60	18								FM Osc. Grid Cap. Cer.
61	100		39396						Osc. Grid Cap. Cer.
62	240		72789						Fixed Trimmer
63	240		72789						Fixed Trimmer PB
64	330		72793						Fixed Padder

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	INSTALLATION NOTES
112	12000 Ω CT	2.25Ω	600Ω CT	.3Ω	71661	A-3-56*	TUD566*	*Drill one new mounting hole. Original Part No. 940394-1

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: JENSEN PART No.	INSTALLATION NOTES
	FIELD RES.	VC IMP.			
113	1100Ω	2.25Ω	71144		Original Part No. 92567-2W
	CONE DIA.	VC DIA.			
114	11-7/8"	1-3/8"	36145		Field Coil Part No. 71146

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: MEISSNER PART No.	
115	Loop Ant.	70Ω	1.5Ω	71862		
116	Dipole Ant.			72555		
117	Loop Load Coil		1.5Ω	72595		
118	SW Ant.Coil	.1Ω	0Ω	71956		
119	FM Ant.Coil	0Ω	0Ω	72044		
120A	Wave Trap		20Ω	71407		Items 120A & 120B wound on same form.
B	RF Choke		2Ω			
121	FM RF Coil		0Ω	72045		
122	BC Osc. Coil		4Ω	71852		
123	SW Osc. Coil		0Ω	71853		
124	FM Osc. Coil		0Ω	71937		
125	Fil. Choke Coil		.1Ω	71942		
126	Input IF(AM)	7Ω	7Ω	71846		
127	Output IF (AM)	6Ω	6.5Ω	71848		
128	Input IF(FM)	.1Ω	.3Ω	72593		
129	Inter. IF "	1.5Ω	.6Ω	72594		
130	Driver Trans. (FM)	.3Ω	.1Ω	71935		
131	Ratio Det. (FM)		.1Ω	71934		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: RCA PART No.		INSTALLATION NOTES
132	Bayonet	7.5	0.20	White	11765		Type 51
133	"	"	"	"	"		" "
134	"	"	"	"	"		" "

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
135	Switch	72039	Function Selector
136	Pushbutton Assy.	72048	
137	Tuning Cap.	72038	
A12	Trimmer	72037	3-35 MMF
A13	"	71807	10-160 MMF
A17	"	72037	3-35 MMF
A18	"	36684	2-20 MMF
A21	"	72046	2.5-18 MMF
A23	"	72047	1.6-18 MMF
A25	"	72047	1.6-18 MMF
	Trimmer Strip	72049	Pushbutton Adj.
	Dial Scale	72707	Glass
	Indicator	72036	Station Selector Pointer

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	RCA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
65	1.5 Meg	1	72034				Volume Control, Tone Switch & Line Sw. ‡

‡This is a single unit operated by concentric shafts.

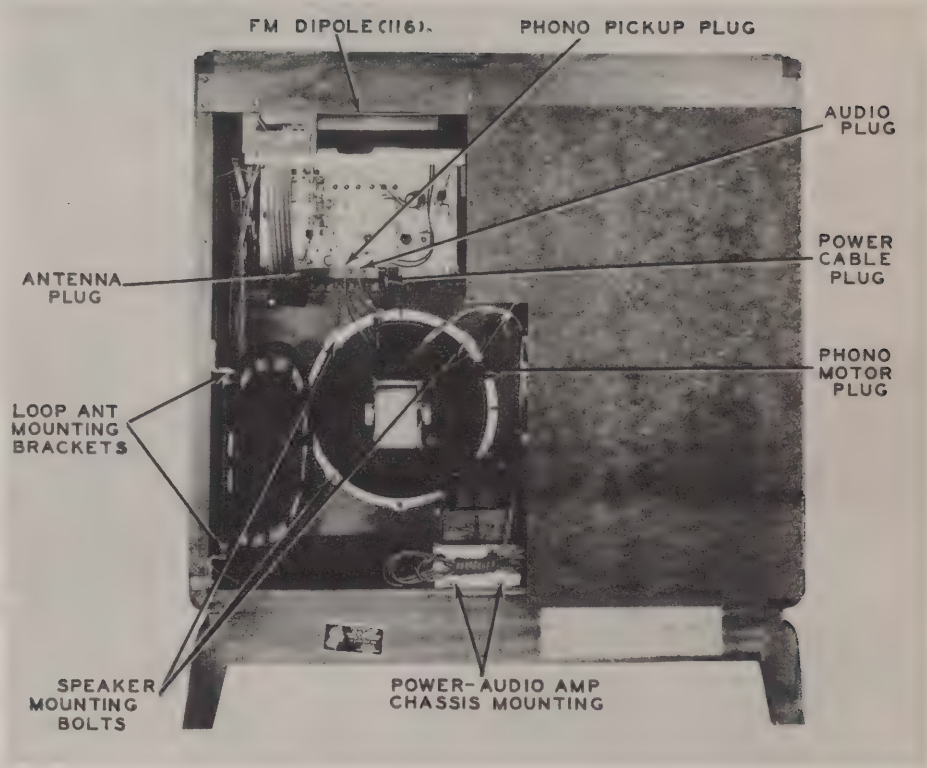
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	
66	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn. Antenna Loading
67	8200Ω	½	14250	BTS-8200	Gray-Red-Red Oscillator Feedback
68	2.2 Meg.	½	30649	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
69	3300Ω	½	30733	BTS-3300	Or.-Or.-Red RF Screen Dropping
70	6800Ω	1	38887	BTA-6800	Blue-Gray-Red RF Plate Load
71	2700Ω	½	30730	BTS-2700	Red-Vi.-Red RF Plate Decoupling
72	1200Ω	½	30731	BTS-1200	Br.-Red-Red Wave Trap Shunt
73	100KΩ	½	3252	BTS-100K	Br.-Blk.-Yl. AVC Network
74	100Ω	½	34765	BW-½-100	Br.-Blk.-Br. Decoupling
75	15KΩ	1	71915	BTA-15K	Br.-Grn.-Or. Oscillator Plate Load
76	10KΩ	1	71914	BTA-10K	Br.-Blk.-Or. Oscillator Screen Dropping
77	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
78	2700Ω	½	30730	BTS-2700	Red-Vi.-Red Decoupling
79	3.9 Meg.	½	70249	BTS-3.9 Meg.	Or.-White-Grn. Mixer Grid
80	220Ω	½	5201	BW-½-220	Red-Red-Br. Mixer Cathode
81	27KΩ	½	30409	BTS-27K	Red-Vi.-Or. Mixer Screen Dropping
82	2200Ω	½	34767	BTS-2200	Red-Red-Red Mixer Plate Decoupling
83	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
84	68Ω	½	34763	BW-½-68	Blue-Gray-Blk. IF Cathode
85	2200Ω	½	34767	BTS-2200	Red-Red-Red IF Screen Decoupling
86	2200Ω	½	34767	BTS-2200	Red-Red-Red IF Plate Decoupling
87	22KΩ	½	30492	BTS-22K	Red-Red-Or. Diode RF Filter
88	270KΩ	½	30651	BTS-270K	Red-Vi.-Yl. Diode Load
89	33KΩ	½	30685	BTS-33K	Or.-Or.-Or. Driver Grid
90	27KΩ	1	71990	BTA-27K	Red-Vi.-Or. Driver Screen Dropping
91	680Ω	½	12262	BTS-680	Blue-Gray-Br. Driver Plate Decoupling
92	680Ω	½	12262	BTS-680	Blue-Gray-Br. Decoupling
93	22KΩ	½	30492	BTS-22K	Red-Red-Or. Ratio Detector Bias Network
94	15KΩ	½	36714	BTS-15K	Br.-Grn.-Or. De-emphasis
95	18KΩ	½	3219	BTS-18K	Br.-Gray-Or. Tone Compensation
96	27KΩ	½	30409	BTS-27K	Red-Vi.-Or. Tone Compensation
97	10 Meg.	½	30992	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
98	270KΩ	½	30651	BTS-270K	Red-Vi.-Yl. AF Plate Load
99	2.2 Meg.	½	30649	BTS-2.2 Meg.	Red-Red-Grn. Ratio Detector Bias Network
100	22 Meg.	½	71917	BTS-22 Meg.	Red-Red-Blue Ratio Detector Bias Network
101	2.2 Meg.	½	30649	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
102	100KΩ	½	3252	BTS-100K	Br.-Blk.-Yl. Tone Compensation
103	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl. Phono Shunt
104	56KΩ	½	30650	BTS-56K	Grn.-Blue-Or. Phase Inverter Grid
105	22KΩ	½	30492	BTS-22K	Red-Red-Or. Phase Inverter Cathode
106	2700Ω	½	30730	BTS-2700	Red-Vi.-Red Phase Inverter Cathode
107	27KΩ	½	30409	BTS-27K	Red-Vi.-Or. Phase Inverter Plate Load
108	220KΩ	½	14583	BTS-220K	Red-Red-Yl. Output Grid
109	220KΩ	½	14583	BTS-220K	Red-Red-Yl. Output Grid
110A	2750Ω		71660	DG-2750	Bleeder
B	2500Ω			AB-2500	"
C	180Ω			ABA-200	Bias-See Note

Note-On IRC replacement set slider at 180Ω from one end.

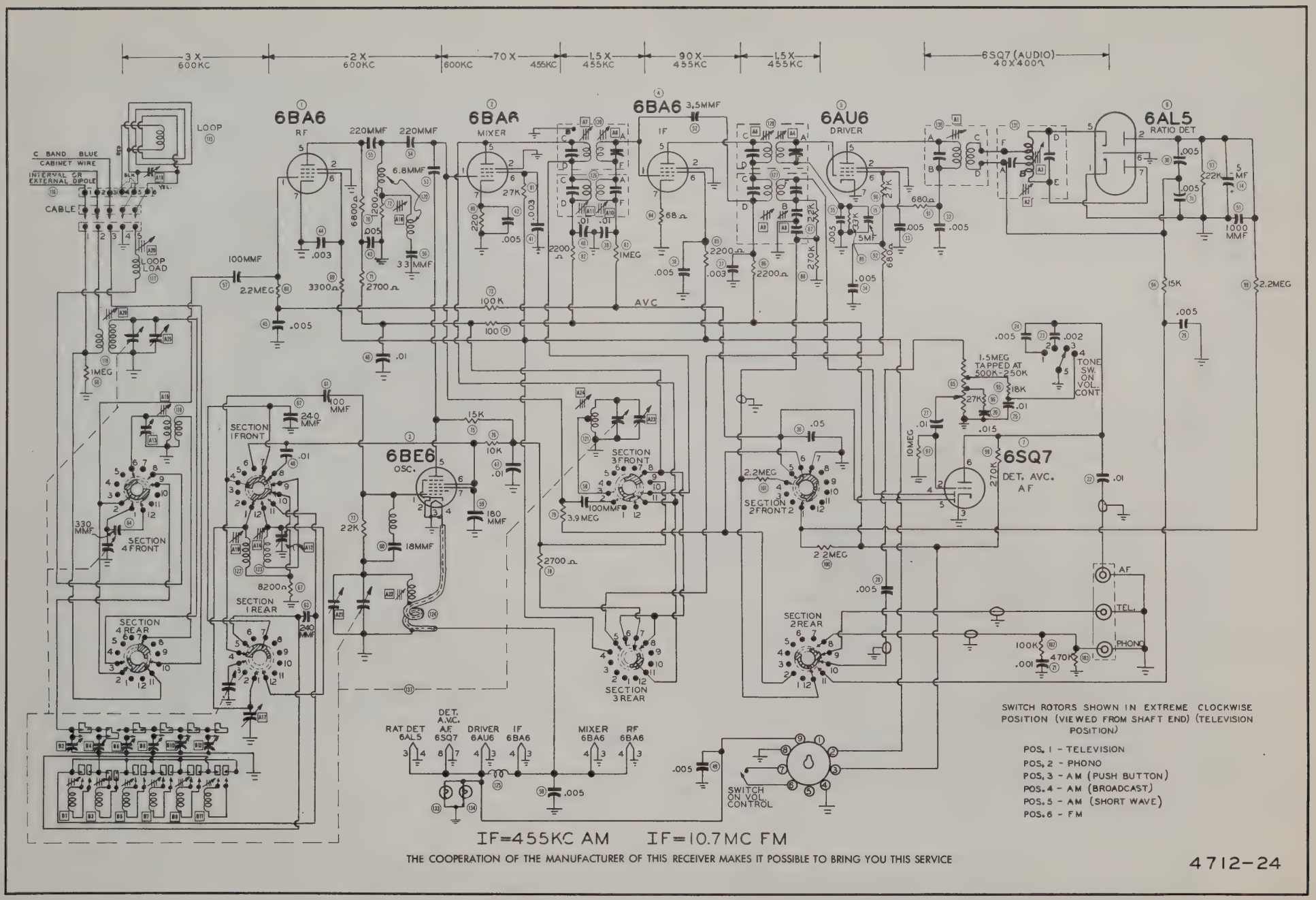
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA PART No.	STANCOR PART No.	THORDARSON PART No.	
111	117V AC @ 1.2A	720V CT @ .137A	5.1V AC @ 2.5A	6.3V AC @ 4.2A	37048	P-8014	T22R06	Original Part No. 94161-501



DISASSEMBLY INSTRUCTIONS

1. Remove two push on type control knobs.
2. Remove loop antenna leads from antenna strip.
3. Remove phono and amp. leads from chassis.
4. Remove power plug from chassis.
5. Remove speaker plug from chassis.
6. Remove three hex nuts holding speaker in cabinet. Remove speaker from cabinet.
7. Remove four wood screws holding loop antenna in cabinet. Remove loop from cabinet.
8. Remove pushbuttons from chassis.
9. Remove four hex screws from chassis. Remove chassis from cabinet.
10. Remove phono-motor plug.
11. Remove pilot light from front of cabinet.
12. Remove four bolts holding amp. chassis in cabinet. Remove from cabinet.



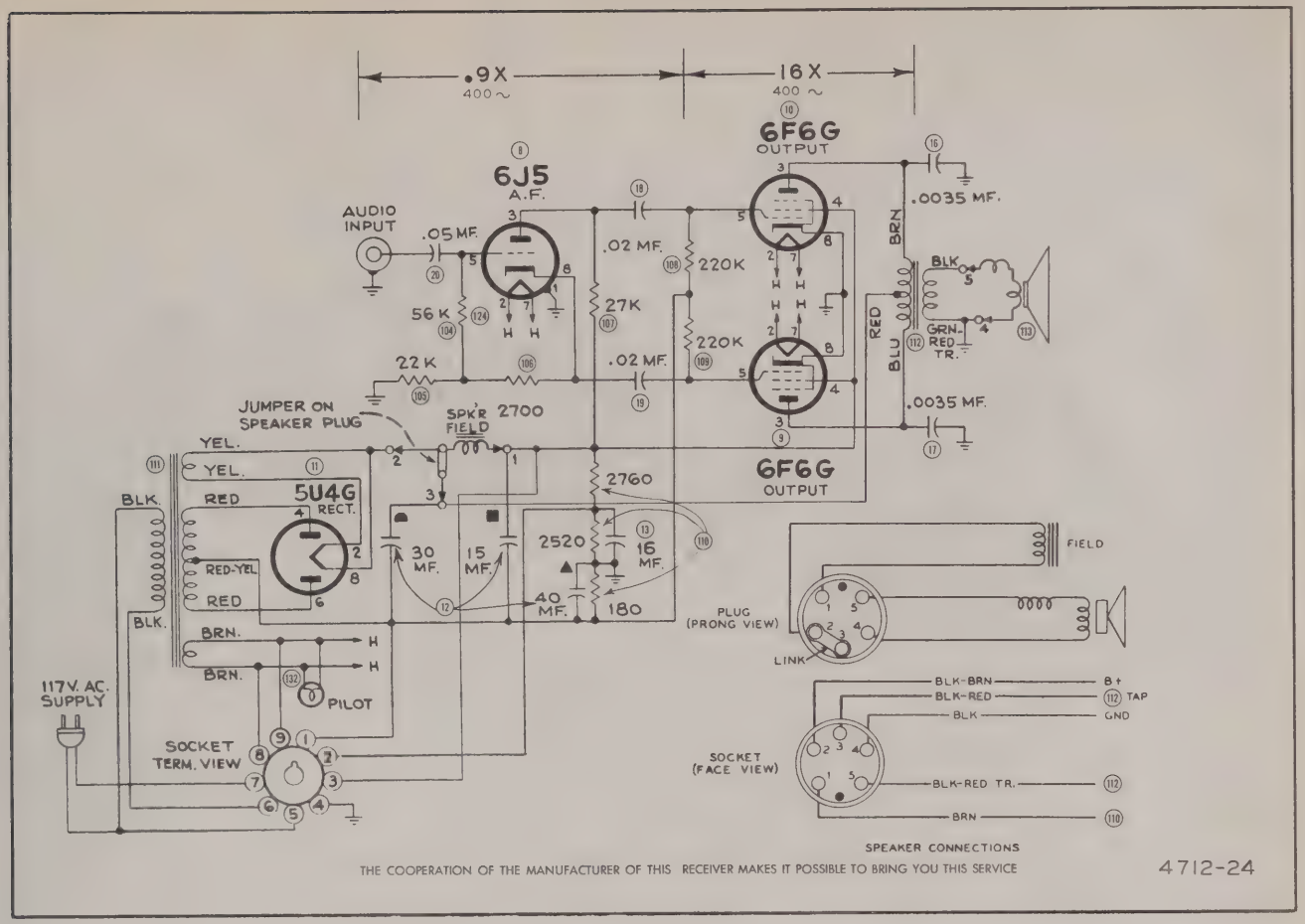
SWITCH ROTORS SHOWN IN EXTREME CLOCKWISE POSITION (VIEWED FROM SHAFT END) (TELEVISION POSITION)

POS. 1 - TELEVISION
POS. 2 - PHONO
POS. 3 - AM (PUSH BUTTON)
POS. 4 - AM (BROADCAST)
POS. 5 - AM (SHORT WAVE)
POS. 6 - FM

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4712-24

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4712-24

* NOTE: READINGS ON TUBES #5 & #6 TAKEN IN FM POSITION

VOLTAGE READINGS

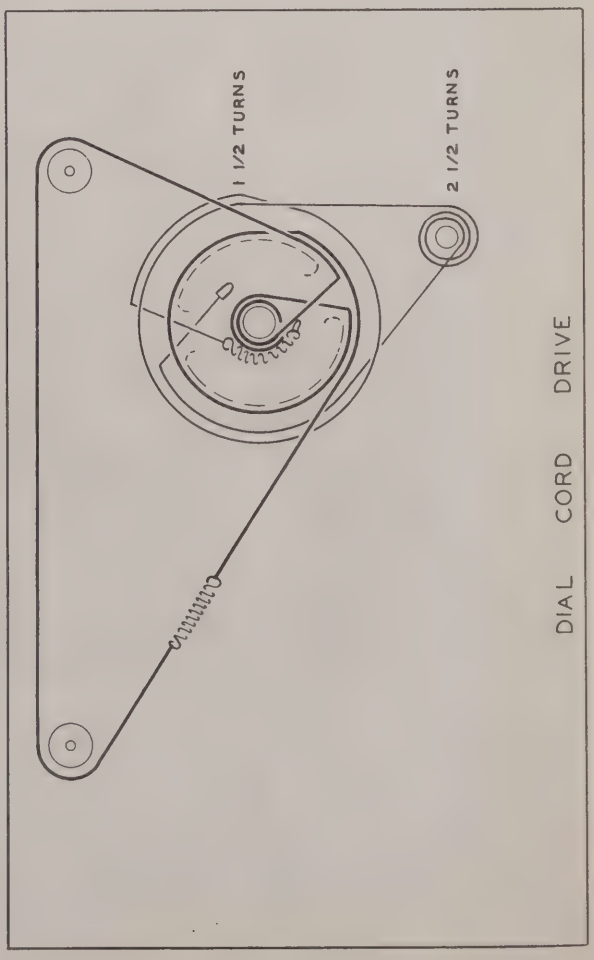
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.6V. DC	0V.	0V.	6.5V. AC	150V. DC	92V. DC	0V.	
2	6BA6	-.1V. DC	0V.	6.5V. AC	0V.	260V. DC	74V. DC	.9V. DC	
3	6BE6	-.2V. DC	0V.	0V.	6.5V. AC	70V. DC	110V. DC	110V. DC	
4	6BA6	-.1V. DC	0V.	0V.	6.5V. AC	245V. DC	103V. DC	.6V. DC	
* 5	6AU6	-.6V. DC	0V.	0V.	6.5V. AC	230V. DC	123V. DC	0V.	
* 6	6AL5	0V.	-.7V. DC	6.5V. AC	0V.	-.3V. DC	0V.	-.3V. DC	
7	6SQ7	0V.	-.6V. DC	0V.	-4 V. DC	-.5V. DC	112V. DC	0V.	6.5V. AC
8	6J5	0V.	0V.	200V. DC	52V. DC	43V. DC	47V. DC	6.5V. AC	52V. DC
9	6F6G	0V.	0V.	376V. DC	260V. DC	-23V. DC	0V.	6.5V. AC	0V.
10	6F6G	0V.	0V.	376V. DC	260V. DC	-23V. DC	0V.	6.5V. AC	0V.
11	5U4G	0V.	420V. DC	0V.	360V. AC	0V.	360V. AC	0V.	420V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	5 MEG.	0Ω	0Ω	.1Ω	10 KΩ	6.6 KΩ	0Ω	
2	6BA6	7 MEG.	0Ω	.1Ω	0Ω	6.7 KΩ	30 KΩ	200Ω	
3	6BE6	22 KΩ	0Ω	0Ω	.1Ω	22.2KΩ	17.2 KΩ	17.2 KΩ	
4	6BA6	3.5MEG.	0Ω	0Ω	.1Ω	5 KΩ	5 KΩ	63Ω	
* 5	6AU6	30 KΩ	0Ω	0Ω	.1Ω	5.9KΩ	32.2KΩ	0Ω	
* 6	6AL5	0Ω	20 KΩ	.1Ω	0Ω	INF.	0Ω	INF.	
7	6SQ7	0Ω	10 MEG.	0Ω	290 KΩ	2.8 MEG.	275 KΩ	0Ω	.1Ω
8	6J5	0Ω	0Ω	28KΩ	21 KΩ	75 KΩ	18 KΩ	.1Ω	21 KΩ
9	6F6G	0Ω	0Ω	6KΩ	4.5KΩ	220 KΩ	0Ω	.1Ω	0Ω
10	6F6G	0Ω	0Ω	6KΩ	4.5 KΩ	200 KΩ	INF.	.1Ω	0Ω
11	5U4G	INF.	6 KΩ	INF.	230Ω	INF.	230Ω	INF.	6 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

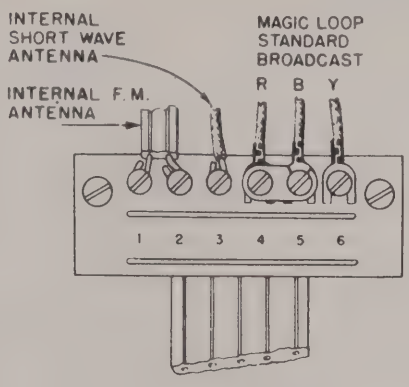


ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

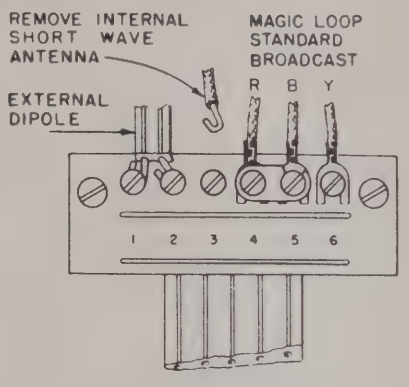
To set pointer, turn tuning cap. fully closed and set pointer to reference mark on left end of dial backplate. This reference mark is the mark referred to in steps below. Use a vacuum tube voltmeter as an output indicator when aligning FM channel. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to Pin 1 (grid) 6AU6 (5). Low side to chassis.	10.7 (30% mod. 400 ∿ AM)	FM (fully clockwise)	High freq. end of dial.	VTVM across cap. (14)	A1	Connect 680Ω resistor between lugs "D" and "E" of ratio detector transformer (131). Adjust A1 for maximum deflection.
2	.01 MFD	"	"	"	"	Connect 2 68KΩ resistors in series across cap. (14). Connect common lead of VTVM to junction of these resistors. Connect DC probe to junction of cap. (29) and resistor (94)	A2	Remove 680Ω res. from lugs "D" and "E". Adjust A2 for zero reading. Zero point is approached rapidly and continued adjustment causes polarity to reverse. A slow approach to the zero point is an indication of severe detuning and A2 should be turned in the opposite direction.
3	.01 MFD	"	"	"	"	Leave VTVM connected as in Step 2. Connect output meter across voice coil	A3	Adjust for minimum output. The zero DC balance and minimum AF output should occur at the same point. If they do not it may be necessary to adjust A2 and A3 simultaneously so that they will occur at the same point. Repeat Step 1 omitting 680Ω resistor connections. Remove all connections.
4	.01 MFD	High side to Pin #1 (grid) of 6BA6 Mixer (2). Low side to chasssis.	"	"	Low freq. end of dial.	VTVM across cap. (14). (10V scale)	A4, A5, A6, A7.	Alternately load primary and secondary of each transformer with 680Ω while the opposite side of the same transformer is being adjusted. Adjust for maximum deflection.
5	.01 MFD	"	455KC (30% mod. 400 ∿ AM)	C Band (2nd position counter clockwise)	High freq. end of dial	Output meter across voice coil	A8, A9, A10, A11	Adjust for maximum output. Do not disturb any of the 10.7MC. IF adjustments as it will detune the 455KC IFs.
6	150Ω 1% series with 25 MFD.	High side to terminal #3 on ant. cable. Low side to chassis.	15.5MC	"	5-13/32" to right from reference mark.	"	A12	Adjust for maximum output. Tune signal generator to 16.41MC. Image should be heard. If it is not, reset signal generator to 15.5MC and open A12 to next peak and recheck for image.
7	"	"	"	"	Tune for maximum output.	"	A13	Rock tuning cap. and adjust for maximum output.
8	"	"	9.5MC	"	5/8" to right from reference mark.	"	A14	Adjust for maximum output. Turn signal generator to 10.4MC. The image should be heard. If it is not, reset signal generator to 9.5 and open A14 (counter clockwise) to next peak and recheck for image.
9	"	"	"	"	Tune for maximum output.	"	A15	Rock tuning cap. and adjust for maximum output. Repeat Steps 6, 7, 8 and 9.
10	200MMFD	High side to red lead (link open) of loop. Low side to chassis.	455KC	"A" Band (3rd position counter clockwise)	Tuning cap. fully closed.	"	A16	Adjust for minimum output.
11	200MMFD	"	1400KC	"	5" to right from reference mark.	"	A17, A18	Adjust for maximum output.
12	200MMFD	"	600KC	"	1-3/32" to right from reference mark.	"	A19, A20	Adjust for maximum output. Repeat Steps 11 and 12.
13	2 120Ω resistors	High side to FM ant. term. #1 in series with 120Ω. Low side to FM ant. term. #2 in series with 120Ω.	106MC	FM Band	4-23/32" to right from reference mark.	VTVM across cap. (14).	A21	Adjust for maximum deflection. Two such points can be found. Use the one of greater capacity.
14	"	"	88MC	"	1/4" to right from reference mark.	"	A22	Adjust for maximum deflection. Repeat Steps 13 & 14.
15		Disconnect signal generator and turn off.		"	4-23/32" to right from ref. mark.	"	A23	Adjust for maximum deflection. (noise voltage)
16		"		"	31/32" to right from reference mark.	"	A24	Adjust for maximum deflection. (noise voltage) Repeat Steps 15 and 16.
17	2 120Ω resistors	High side to FM ant. term. #1 in series with 120Ω. Low side to FM ant. term. #2 in series with 120Ω.	106MC	"	Tune for maximum output.	"	A25	Adjust for maximum deflection.
18	"	"	90MC	"	"	"	A26	Adjust for maximum deflection. Repeat Steps 17 and 18.

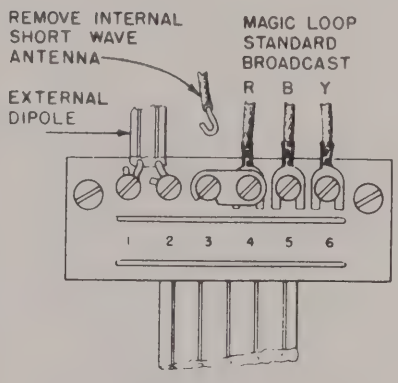
REINSTALL RECEIVER IN CABINET AND ADJUST A18 ON A WEAK STATION NEAR 1400KC FOR MAXIMUM VOLUME.



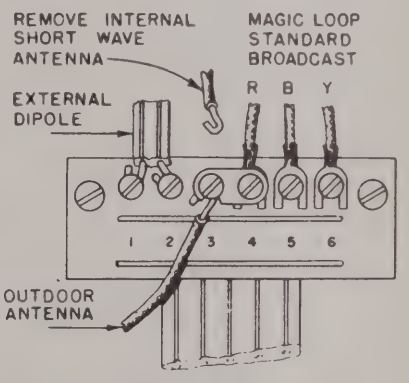
(1) INTERNAL ANTENNAS



(2) EXTERNAL DIPOLE ON FM & SW. MAGIC LOOP ON STANDARD BROADCAST BAND.



(3) EXTERNAL DIPOLE ON ALL BANDS



(4) EXTERNAL DIPOLE ON F.M. OUTDOOR ANTENNA OTHER BANDS

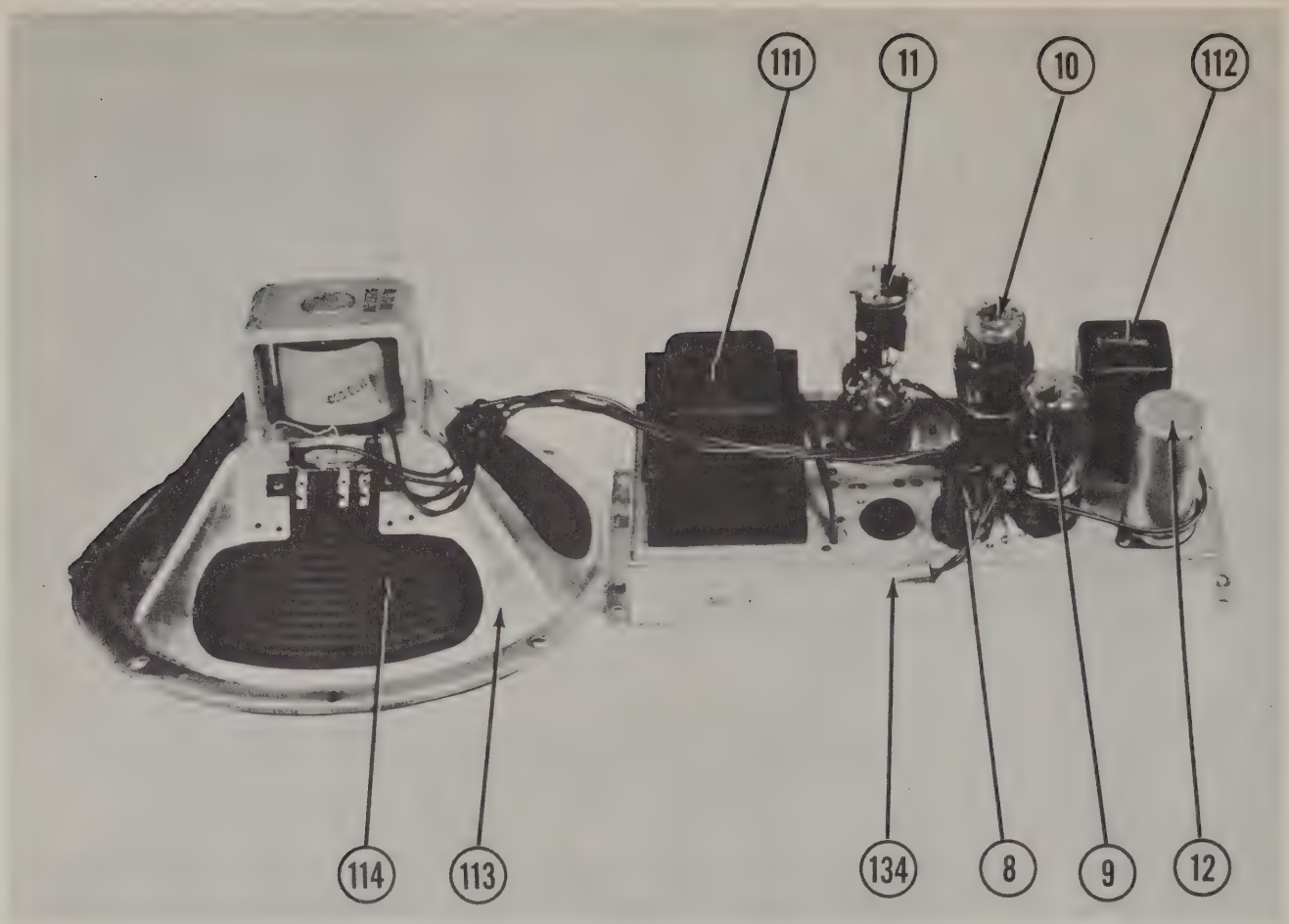
EXTERNAL ANTENNAS-If reception is not satisfactory on one or more of the three bands, using the built-in cabinet antennas, an external antenna may be used. The Magic Loop Antenna will usually provide sufficient pickup on the Standard Broadcast band, but if an external dipole is installed to improve reception on Frequency Modulation it may be used for Standard Broadcast and Short Wave as well. Connections are made to the antenna terminal board in the back of the cabinet. External antennas may be erected indoors or outdoors and should be oriented in direction for requirements of best reception. RCA Television Antenna, Stock No. 225 or 226, or the equivalent with 300-ohm transmission line is recommended for an external antenna.

Figure 1 shows the Antenna Terminal Board with connections for internal cabinet antennas.

Figure 2 shows connections for the RCA Television Antenna replacing those for the internal FM antenna on terminals 1 and 2, and the internal SW antenna disconnected at terminal 3. The external dipole antenna is now the antenna for FM and SW bands.

Figure 3 shows the additional change for connecting the Standard Broadcast band to make use of the external RCA Television Antenna. The link across terminals 4 and 5 is changed to terminals 4 and 3. The external antenna is now effective on all bands. Tighten terminals and be sure that the red, black and yellow leads (R.B.Y.) to terminals 4, 5 and 6 are still in place and securely connected.

Figure 4 shows connections for a separate outdoor antenna on SW and SB reception, and the external dipole on FM. This outdoor antenna should consist of a wire 30 to 60 feet or so in length mounted in a convenient location as high as possible. Connect lead-in from the antenna to terminal 3 on the antenna terminal board. This outdoor antenna is effective on SB and SW bands. If this connection makes the SB signal too strong, causing overload and distortion, replace the link across terminals 4 and 5 as in figures 1 and 2. This outdoor antenna is now effective on SW only.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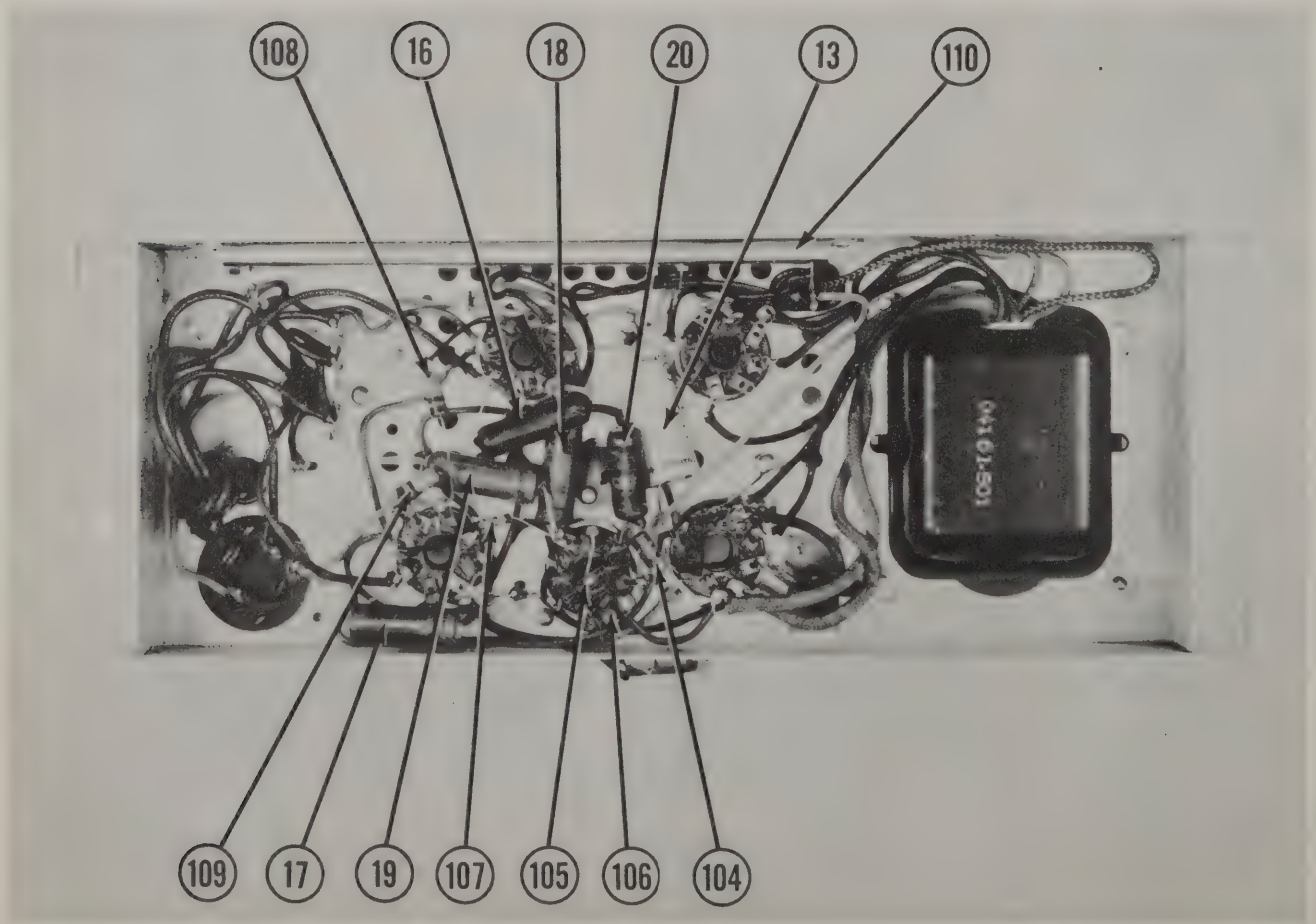
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SENTINEL
MODELS 284 GA, IU 284 GA

SENTINEL
MODELS 284 GA, IU 284 GA

SENTINEL MODEL 284GA

TRADE NAME	Sentinel, Model 284GA, IU284GA
MANUFACTURER	Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Chicago
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .230 Amp. @ 117 Volts
TUNING RANGE—BROADCAST	540-1730KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With the receiver in the cabinet turn tuning control completely counter clockwise and set pointer at last reference mark on low freq. end of dial. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.02 MFD	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	250MMFD	High side to ext. ant. lead. Low side to ext. ground lead.	1730KC	"	"	A5	Adjust for maximum output.
3	250MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

DISASSEMBLY INSTRUCTIONS

1. Remove two push on type control knobs.
2. Remove four Phillips head screws holding chassis mounting board. Slide chassis and chassis mounting board out.
3. Remove two Phillips head screws holding phono-radio switch and slide down through hole.
4. Unsolder phono-motor leads from terminal strip.
5. Unsolder phono-pickup leads from terminal strip.
6. Remove Phillips head screws holding terminal strips and remove.
7. Remove three chassis mounting bolts. Remove chassis from mounting board.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8K	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	.05	150	25E1‡	UP6BJ34	FP214	DY-2x50-150	EL-25	AF1010D	■ Filter
B	50	150							▲ "
7	.05	400	25E416	DT4S5	TP426	S-4-05	TC-15	434-05	Line Filter
8	.02	400	25E414	DT4S2	TP424	S-4-02	TC-12	434-02	Output Plate Bypass
9	.1	400	23E211	DT4S1	TP421	S-4-01	TC-11	434-01	Audio Coupling
10	.1	200	23E211	DT4S1	TP421	S-4-01	TC-11	434-01	" "
11	.05	400	25E416	DT4S5	TP426	S-4-05	TC-15	434-05	Phono Shield Isolation
12	.1	400	23E211	DT4S1	TP421	S-4-01	TC-11	434-01	Vctor Isolation*
13	.2	400	23E421	DT4P2	TP429	S-4-2	TC-2	434-.2	Line Isolation †
14	.1	400	23E211	DT4P1	TP428	S-4-1	TC-1	434-.1	AVC Filter
15	100	300	23E38	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Audio Plate Bypass
16	100	300	23E39	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
17	100	300	23E38	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
18	100	300	23E39	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor

*Not used on Underwriters approved models.
†Used on Underwriters approved models only.
‡Underwriters approved models use Pt No. 25E18.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	500KΩ	1	25E-1	MK401 #	D13-133 #	AM-60-Z #	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

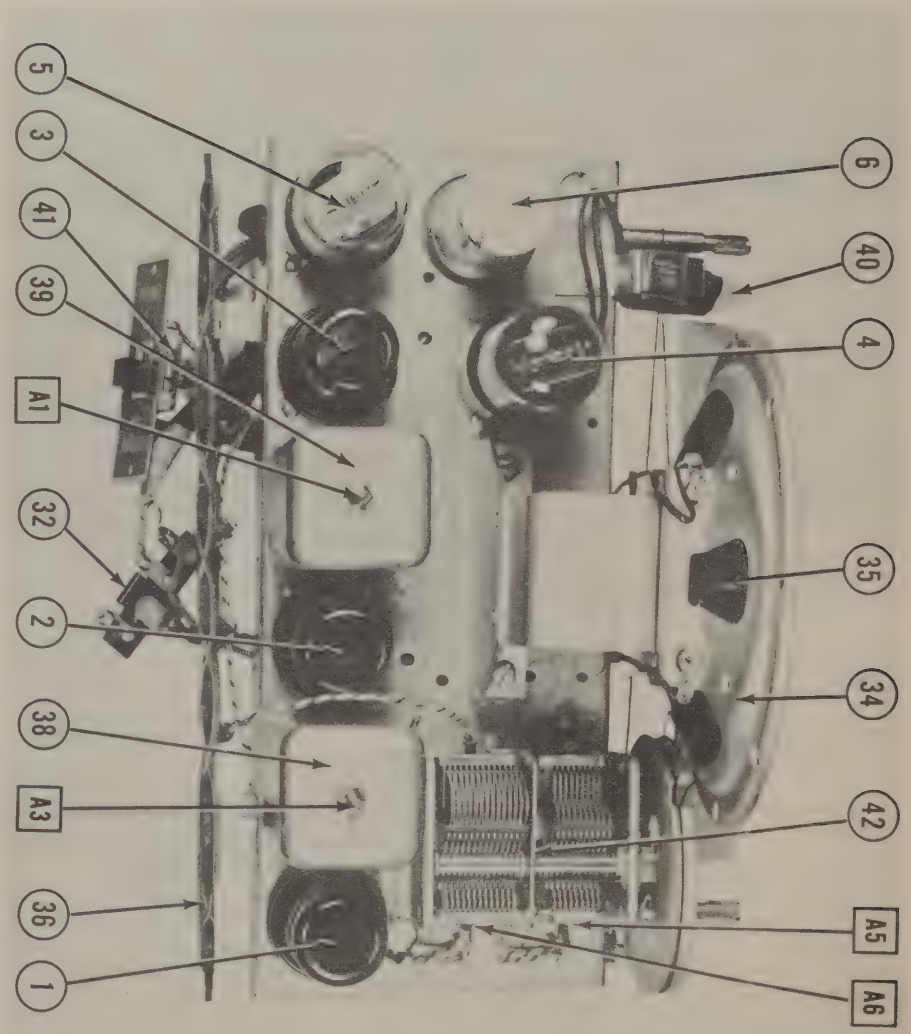
Wrap scotch tape around shaft adjacent to guide disc for dial cord surface.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	IDENTIFICATION CODES
20	2.2MΩ	1/3	27E223	BTS-22K	Red-Red Or. Oscillator Grid
21	10 Meg.	1/3	23E106	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
22	3.3 Meg.	1/3	27E335	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
23	220KΩ	1/3	27E224	BTS-220K	Red-Red-Yl. Line Isolating-See Note
24	68KΩ	1/3	27E683	BTS-68K	Blue-Gray-Or. RF Filter
25	3.3 Meg.	1/3	27E335	BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
26	220KΩ	1/3	27E224	BTS-220K	Red-Red-Yl. AF Plate Load
27	470KΩ	1/3	27E474	BTS-470K	Yl.-Vi.-Yl. Output Grid
28	150Ω	1/3	27E151	BW-½-150	Br.-Grn.-Br. Output Cathode
29	1200Ω	1	27E222-2	BTS-2200	Red-Red-Red Filter
30	47Ω	1/2	27E470-2	BW-½-47	Yl.-Vi.-Blk. Surge Limiter
31	100Ω	1/2	27E101	BW-½-100	Br.-Blk.-Br. Pilot Light Shunt
32	1 Meg.	1/2		BTS-1 Meg.	Br.-Blk.-Grn. Series Phono

See Note-Used in Underwriters approved models only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SENTINEL PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
33	[illegible]	[illegible]	2.7Ω	.4Ω	20E2	A-8 [illegible]	T-2543		Drill one new mounting hol[illegible]

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	SENTINEL PART No.	JENSEN PART No.		
34	P.M.	3.2Ω	1E9	ST-105 †† Mod. P6-X		††Fabricate new mounting bracket.
	C.S. DIA.	VC DIA.				
35	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

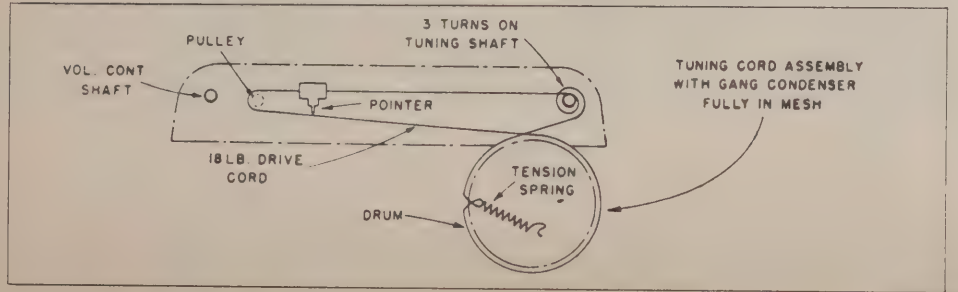
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.	
36	Loop Ant.	0Ω	.5Ω	20E4		
37	Osc. C.11	.5Ω	0Ω	20E1c2	14-1040	
38	Input IF	11Ω	11Ω	20E21	16-5740	Alternate Input IF Part #20E261
39	Output IF	11Ω	10Ω	20E22	16-5742	Alternate Output IF Part #20E261-2

DIAL LIGHT

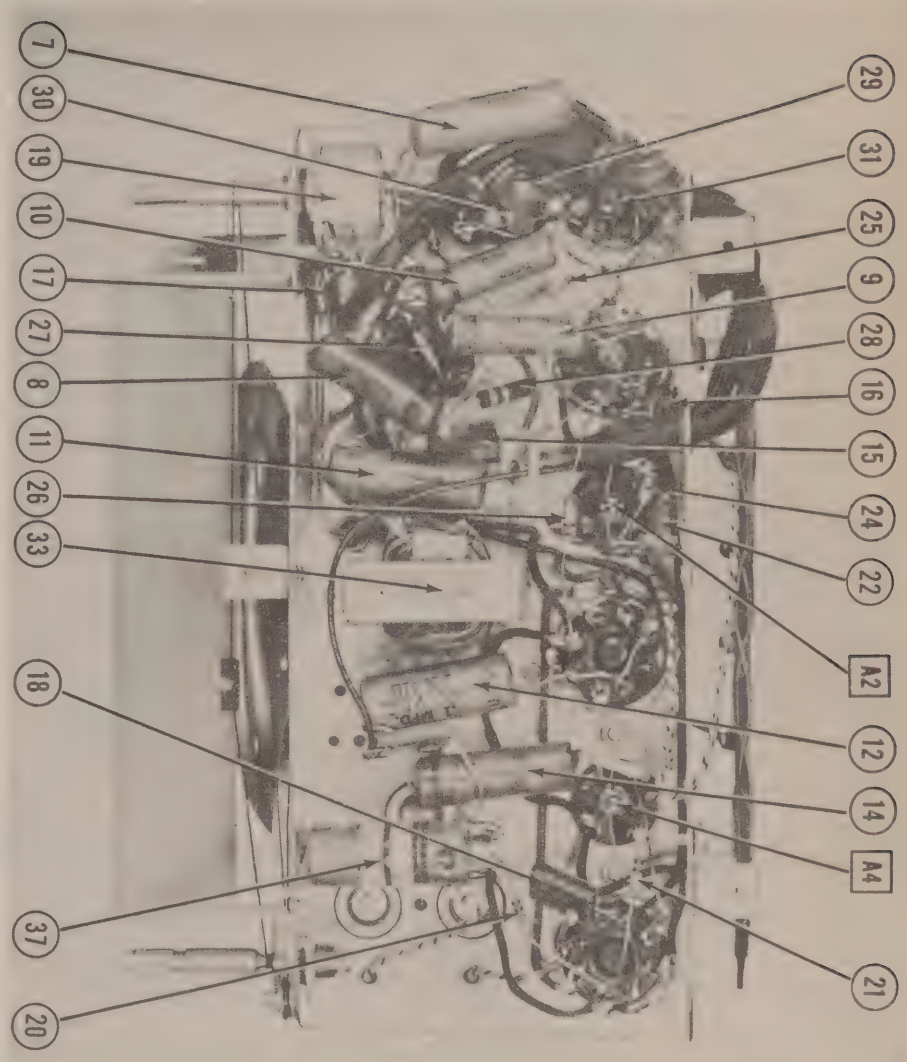
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SENTINEL PART No.		
40	Bayonet	6-8	0.15	Brown	40E1		Type 47

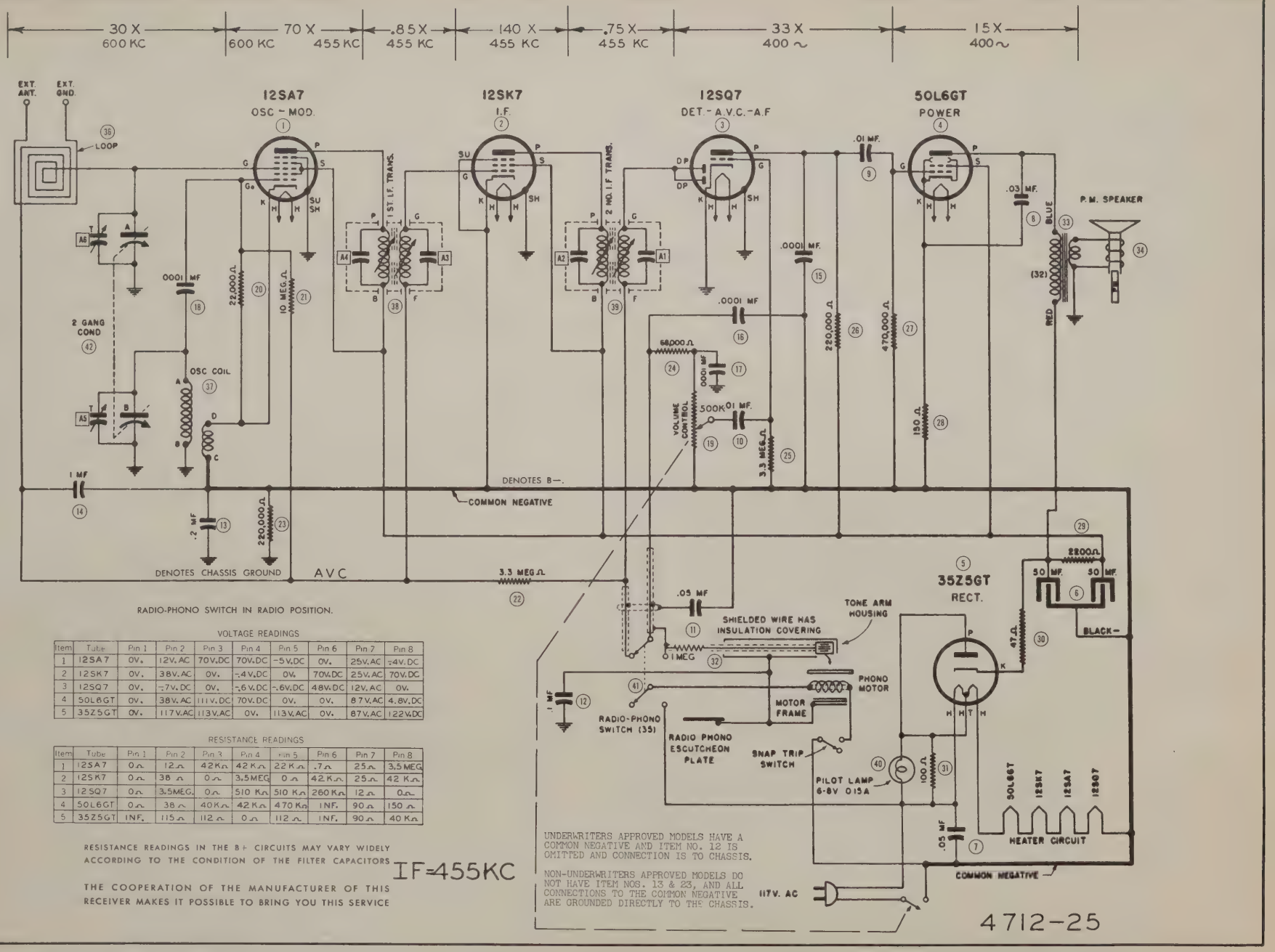
MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
41	Switch	20E263-2	Radio-Phono (Model 284GA)
	"	20E263-4	" " (Model IU284GA)
42	2 Gang Var. Cap.	24E2	39-450 MMF, 33-107 MMF (3 Mtg. holes)
	" " " "	24E18	Alternate (2 Mtg. Holes)
	Crystal Cartridge		ASTATIC Type L-70-A
	Dial Pointer	35E8	
	Dial Scale	36B1C-2	
	Cabinet	7E106	



CHASSIS—BOTTOM VIEW





RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	12V. AC	70V.DC	70V.DC	-5V.DC	0V.	25V. AC	-4V. DC
2	12SK7	0V.	38V. AC	0V.	-.4V.DC	0V.	70V.DC	25V. AC	70V. DC
3	12SQ7	0V.	-.7V. DC	0V.	-.6 V. DC	-.6V.DC	48V.DC	12V. AC	0V.
4	50L6GT	0V.	38V. AC	111 V. DC	70V. DC	0V.	0V.	87 V. AC	4.8V. DC
5	35Z5GT	0V.	117 V. AC	113V. AC	0V.	113 V. AC	0V.	87 V. AC	122 V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0Ω	12Ω	42KΩ	42 KΩ	22 KΩ	.7Ω	25Ω	3.5 MEG.
2	12SK7	0Ω	38 Ω	0Ω	3.5MEG.	0Ω	42 KΩ	25Ω	42 KΩ
3	12SQ7	0Ω	3.5MEG.	0Ω	510 KΩ	510 KΩ	260 KΩ	12Ω	0Ω
4	50L6GT	0Ω	38Ω	40KΩ	42 KΩ	470 KΩ	INF.	90Ω	150Ω
5	35Z5GT	INF.	115Ω	112Ω	0Ω	112Ω	INF.	90Ω	40 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

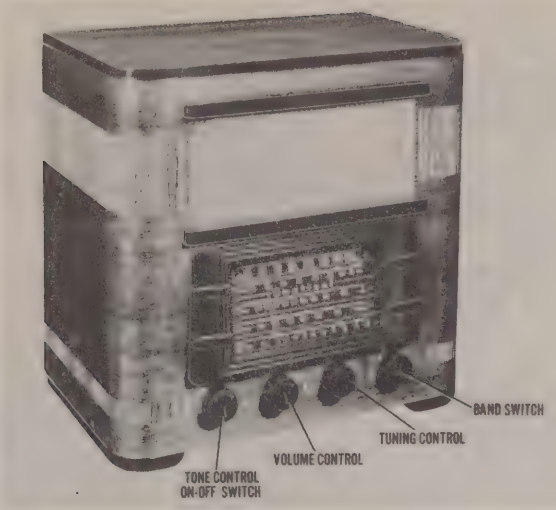
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

UNDERWRITERS APPROVED MODELS HAVE A COMMON NEGATIVE AND ITEM NO. 12 IS OMITTED AND CONNECTION IS TO CHASSIS.

NON-UNDERWRITERS APPROVED MODELS DO NOT HAVE ITEM NOS. 13 & 23, AND ALL CONNECTIONS TO THE COMMON NEGATIVE ARE GROUNDED DIRECTLY TO THE CHASSIS.

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



SENTINEL MODEL 295-T

TRADE NAME	Sentinel, Model 295-T
MANUFACTURER	Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.
TYPE SET	Battery & AC Operated Multi-Band Superheterodyne Receiver
TUBES (SIX)	Types, 6K8 Converter, 6K7 or 6S7 IF Amp., 6U5/6G5 Tuning Ind., 6Q7G or 6T7G Det.-AVC-AF, 6K6GT or 6G6G Power Output, 6X5GT Rectifier.
POWER SUPPLY RATING	110-or 235 Volts AC or 6 Volt Storage Battery .310 Amp. @ 117 Volts AC or 3.7 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	535-1650KC SHORT WAVE 3.0-9.5MC, 9.2-11.0MC, 10.8-14.1MC, 13.6-23.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.02 MFD.	High side to grid cap. of 6K8. Low side to chassis.	455KC	BC (fully clockwise)	Tuning cap. fully open.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output.
2	250MMFD.	High side to "A", low side to "G" of ant. terminal strip.	1650KC	"	"	"	A5	Adjust for maximum output.
3	250MMFD.	"	1400KC	"	Tune for maximum output.	"	A6	Rock tuning cap. and adjust for maximum output.
4	250MMFD.	"	600KC	"	"	"	A7	" Repeat Steps 2, 3 and 4.
5	400Ω carbon res.	"	9.5MC	SW 1 (1 position from fully clockwise)	Tuning cap. fully open.	"	A8	Adjust for maximum output.
6	"	"	8MC	"	Tune for maximum output.	"	A9	Rock tuning cap. and adjust for maximum output.
7	"	"	11.1MC	SW 2 (2 positions from fully clockwise)	Tuning cap. fully open.	"	A10	Adjust for maximum output.
8	"	"	10.8MC	"	Tune for maximum output.	"	A11	Rock tuning cap. and adjust for maximum output.
9	"	"	14.1MC	SW 3 (3 positions from fully clockwise)	Tuning cap. fully open.	"	A12	Adjust for maximum output
10	"	"	13.8MC	"	Tune for maximum output.	"	A13	Rock tuning cap. and adjust for maximum output.
11	"	"	23.5MC	SW 4 (fully counter clockwise)	Tuning cap. fully open.	"	A14	Adjust for maximum output
12	"	"	22MC	"	Tune for maximum output.	"	A15	Rock tuning cap. and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SENTINEL PART No.	STANDARD REPLACEMENT		
1	Converter	[illegible]	[illegible]	K	
[illegible]	[illegible]	[illegible]	[illegible]	7R	
[illegible]	IF [illegible]	[illegible]	[illegible]	8R	
[illegible]	[illegible]	[illegible]	[illegible]	8R	
[illegible]	[illegible]	[illegible]	[illegible]	7V	
[illegible]	[illegible]	[illegible]	[illegible]	7V	
[illegible]	[illegible]	[illegible]	[illegible]	8	
[illegible]	[illegible]	[illegible]	[illegible]	8G	
[illegible]	Rectifier	[illegible]	[illegible]	8G	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

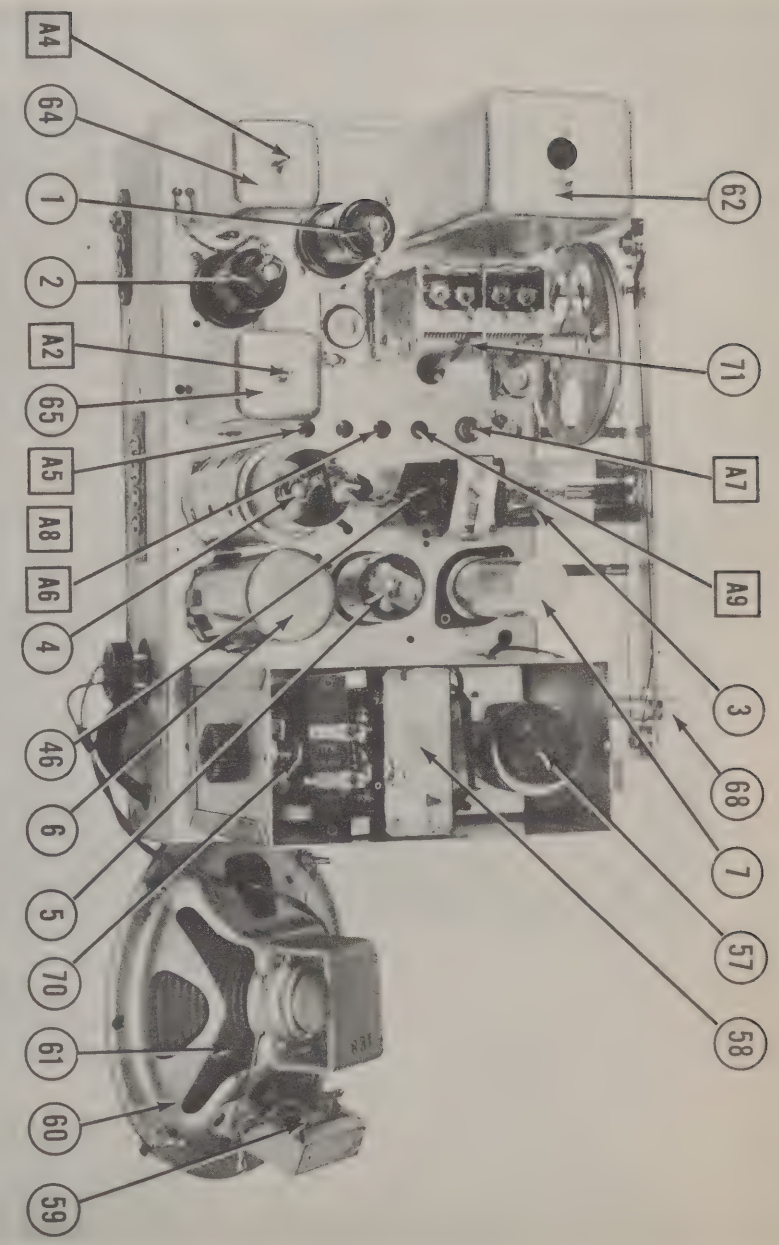
ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SENTINEL PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
[illegible]	[illegible]	[illegible]	23E7	CP4CJ141	FP-[illegible]	[illegible]	EL-345		■ Filter ▲ "
[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	10	25	25E8	BR102A	TC22	M-10-25	TA-10	PRS25-10	Bias Filter
9	10	25	25E8	BR102A	TC22	M-10-25	TA-10	PRS25-10	Cath. Bypass
10	.5	100	23E129						Hash Filter
11	.5	100	23E129						" "
12	.02	400	23E413	DT4S2	TP423	S-4-02	TC-12	484-02	Line Filter
13	.02	400	23E413	DT4S2	TP423	S-4-02	TC-12	484-02	" "
14	.0125	1000	23E2011	TVC10S15	0T303	TM-10-02	TR-12	1084-015	Buffer
15	.03	400	23E414	DT4S3	TP424	S-4-03	TC-13	484-03	Tone Compensation
16	.005	400	23E408	DT6D5	TP408	S-6-005	TC-25	484-005	Output Plate Bypass
17	.01	400	23E411	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
18	.003	400	23E406	DT6D3	TP406	S-6-003	TC-23	484-003	
19	.01	200	23E211	DT4S1	TP421	S-4-01	TC-11	484-01	AVC Filter
20	.1	200	23E218	DT4P1	TP428	S-4-1	TC-1	484-.1	Screen Bypass
21	.1	200	23E218	DT4P1	TP428	S-4-1	TC-1	484-.1	RF Bypass Pwr. Supp.
22	.1	200	23E218	DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
23	2000	500	23E52	1W5D2	MC457	MW.5-22	1FM-22	1467-002	Hash Filter
24	250	500	23E42	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Tone Compensation
25	100	500	23E39	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	IF Bypass Vol. Cont.
26	100	500	23E39	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
27	100	500	23E39	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
28	2000	500	23E52	1W5D2	MC457	MW.5-22	1FM-22	1467-002	Bias Filter
29	100	500	23E39	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor
30	4000	500	23E55	1D5D4	MC403	MW.5-24	1FM-24	1467-004	Feedback
31	3000	500	23E54-3	1W5D3	MC461	MW.5-23	1FM-23	1467-003	Fixed Padder
32	25	500	23E34	5W5Q25	MC220	MO.5-425	MS-425	1468-000025	RF Couplin
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Fixed Trimmer Cer.
[illegible]	.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	" " "
[illegible]	12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	" " "
[illegible]	.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	" " "

[illegible] for desired capacity.
§Do not use 20 MFD section.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SENTINEL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
[illegible]	[illegible]	1	25E10	MK401	C13-1??	AM-6?-Z	Volume Control
[illegible]	[illegible]		Not Req.	Not Req.	E	KS-??	Attach to 37A per instructions
[illegible]	[illegible]	1	25E5	MK401	D1?-1??	AM-60-Z	Tone Control
[illegible]	[illegible]		Not Req.	Not Req.	E	KS-??	Attach to 38A per instructions
[illegible]	[illegible]		" "	M??	42	SW-A2	" " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SENTINEL PART No.	IRC PART No.	
39	2.2 Meg.	½	27E225	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
40	47KΩ	½	27E473	BTS-47K	Yl.-Vi.-Or. Oscillator Grid
41	39KΩ	½	27E393	BTS-39K	Or.-White-Or. Oscillator Plate Load
42	47Ω	½	27E470	BW-½-47	Yl.-Vi.-Blk. Parasitic Suppressor
43	4.7 Meg.	½	27E475	BTS-4.7 Meg	Yl.-Vi.-Grn. AVC Network
44	4.7 Meg.	½	27E475	BTS-4.7 Meg	Yl.-Vi.-Grn. AVC Network
45	1 Meg.	½	27E105	BTS-1 Meg.	Br.-Blk.-Grn. Tuning Eye Grid
46	220KΩ	½		BTS-220K	Red-Red-Yl. Tuning Eye Plate Load
47	22KΩ	½	27E223-2	BTS-22K	Red-Red-Or. Screen Dropping
48	47KΩ	½	27E473	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
49	10 Meg.	½	27E106	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
50	470KΩ	½	27E474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
51	470KΩ	½	27E474	BTS-470K	Yl.-Vi.-Yl. Output Grid
52	470Ω	½	27E471	BTS-470	Yl.-Vi.-Br. Output Cathode
53	4700Ω	½	27E472-2	BTS-4700	Yl.-Vi.-Red Tone Compensation
54	100Ω	½	27E101	BW-½-100	Br.-Blk.-Br. Bias
55	330Ω	½	27E331	BW-½-330	Or.-Or.-Br. Hash Suppression

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~	SENTINEL PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
56	.043A	450Ω	7 Henries	22E10	C-1707*	T20C52*	*Drill one new mounting hole.

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				SENTINEL PART No.	MALLORY PART No.	RADIART PART No.	
57	Interrupter	6.3	115~	61E1		5301	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SENTINEL PART No.	STANCOR PART No.	THORDARSON PART No.	
58	230V AC tapped @ 117VAC @ 3.1A	380V CT @ .043A	6.3V AC @ 2.3A		22E12			AC Operation
		6.6V DC @ 1.3A	380V CT @ .043A					DC Operation

In AC Operation half of the vibrator primary winding is used as the filament supply.

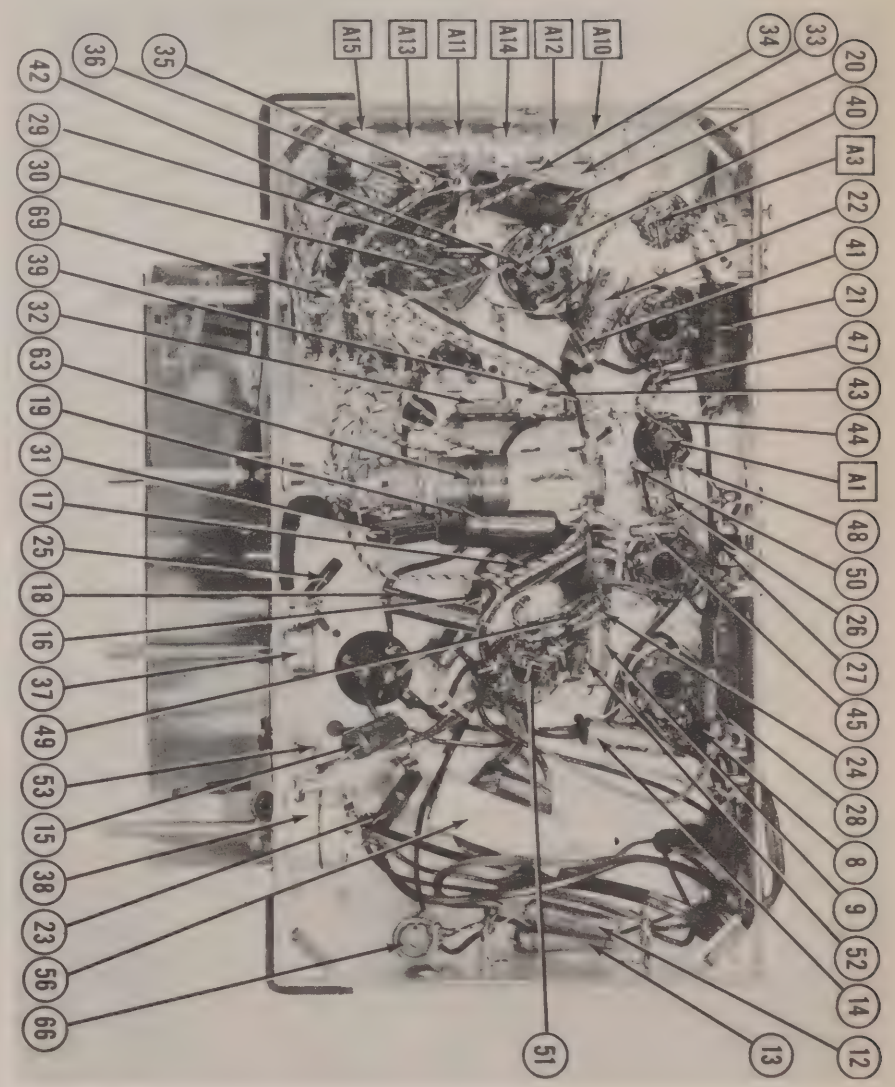
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SENTINEL PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
59	6000Ω	3.5Ω	550Ω	.2Ω		A-3822	T22S87		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	SENTINEL PART No.	JENSEN PART No.		
60A	PM	3.5Ω	1E6	ST-10S Mod. P6-X		
B			1E18			Alternate Speaker
	CONE DIA.	VC DIA.				
61	6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SENTINEL PART No.	REPLACEMENT DATA MEISSNER PART No.	
62A	BC Ant.Coil	28Ω	3.5Ω	2E34		Items 62A, 62B & 62C are in same can.
62B	SW Ant.Coil	1Ω	.3Ω			
62C	" " "	.3Ω	0Ω			
63A	BC Osc. Coil	2.5Ω	6.5Ω	20E19		Items 63A, 63B & 63C are wound on same form.
63B	SW " "	.5Ω	.5Ω			
63C	" " "	.3Ω	0Ω			
64	Input IF	11Ω	11Ω	20E21	16-5740	Alternate Input IF Part No. is 20E261
65	Output IF	11Ω	11Ω	20E22	16-5742	Alternate Output IF Part No. is 20E261-2
66	RF "A" Choke		0Ω	2E36		
67	" " "		0Ω	2E28		

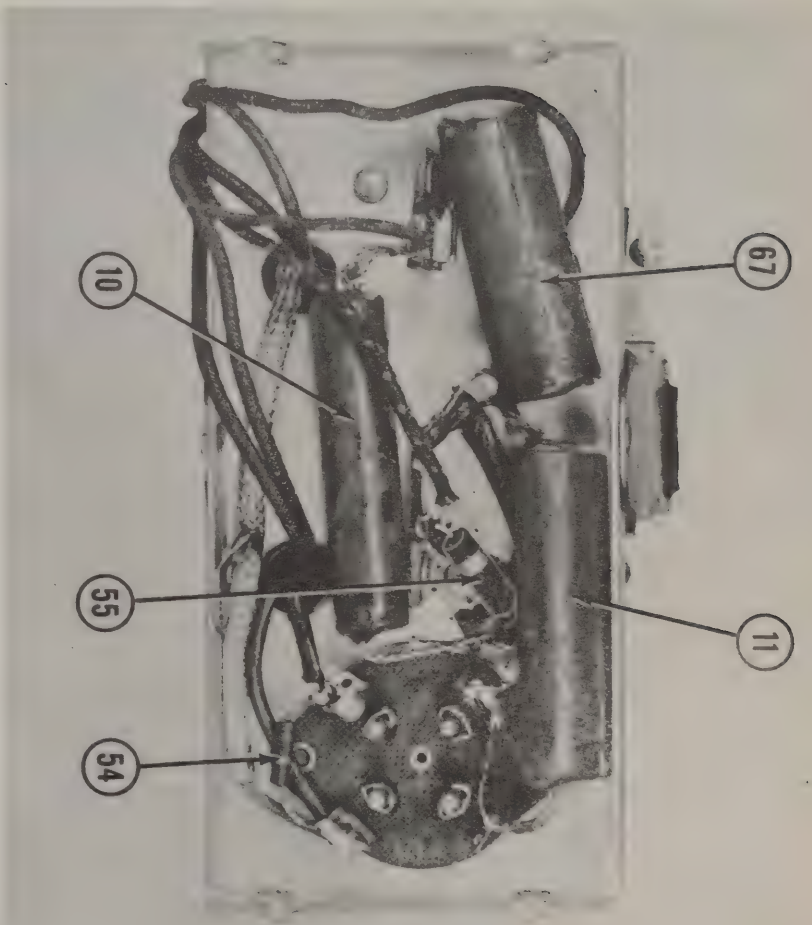
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SENTINEL PART No.	REPLACEMENT DATA	INSTALLATION NOTES
68	Bayonet	7.5	0.2	White	40E3		Type 51

MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
69	Switch	29E6	Band
70	"	29E7	Power Change-Over
71	2 Gang Var. Cap	24E14	16-369, 13-103, 16-369, 13-103MTF
A5	Trimmer Strip	24E10	BC Osc. Adj.
A6			BC Ant. Adj.
A8			SW 1 Osc. Adj.
A9			SW 1 Ant. Adj.
A7	Trimmer	24E16	200-600MTF BC Osc. Padder
A10	Trimmer Strip	24E13	SW 2 Osc. Adj.
A11			SW 2 Ant. Adj.
A12			SW 3 Osc. Adj.
A13			SW 3 Ant. Adj.
A14			SW 4 Osc. Adj.
A15			SW 4 Ant. Adj.
	Dial Pointer	20E67	Band Indicator
	" "	20E174-3	Freq. Indicator
	Dial Scale	36E9	Glass

CHASSIS—BOTTOM VIEW



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-BROADCAST POSITION.

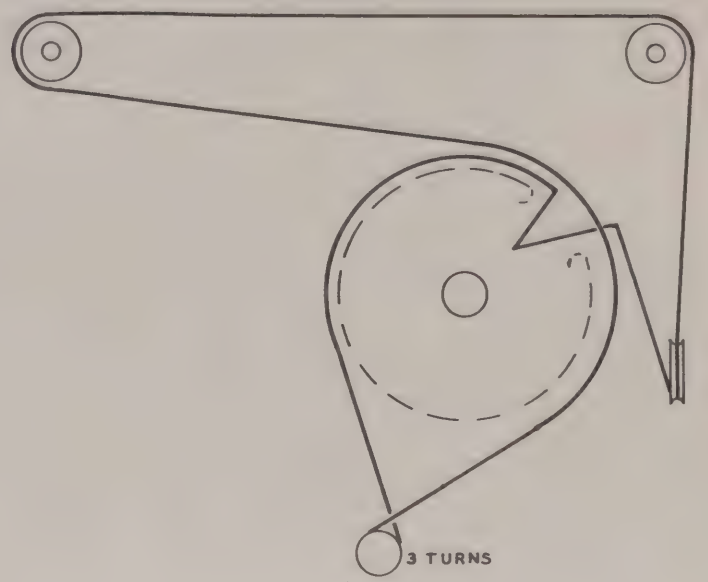
PIN	6K8		6K7	
NO.	VOLT.	RES.	VOLT.	RES.
1	0V.	0Ω	0V.	0Ω
2	0V.	0Ω	6.3V.AC	.1Ω
3	182V. DC	100 KΩ	182V.DC	100 KΩ
4	70V. DC	120 KΩ	70V. DC	120 KΩ
5	-3.3V. DC	47 KΩ	0V.	0Ω
6	73V. DC	140 KΩ	0V.	INF.
7	6.3V. AC	.1Ω	0V.	0Ω
8	0V.	0Ω	0V.	0Ω
CAP	-.4V. DC	5 MEG.	-3V. DC	3 MEG.

PIN	6Q7G		6K6 GT	
NO.	VOLT.	RES.	VOLT.	RES.
1	0V.	0Ω	0V.	INF.
2	0V.	0Ω	6.3V. AC	.1Ω
3	53V. DC	570 KΩ	170 V.DC	100 KΩ
4	-2V. DC	500 KΩ	182V. DC	100 KΩ
5	0V.	INF.	0V.	470 KΩ
6	0V.	INF.	-3V. DC	10 MEG.
7	6.3V. AC	.1Ω	0V.	0Ω
8	0V.	0Ω	12V. DC	450Ω
CAP	-3V. DC	10 MEG.		

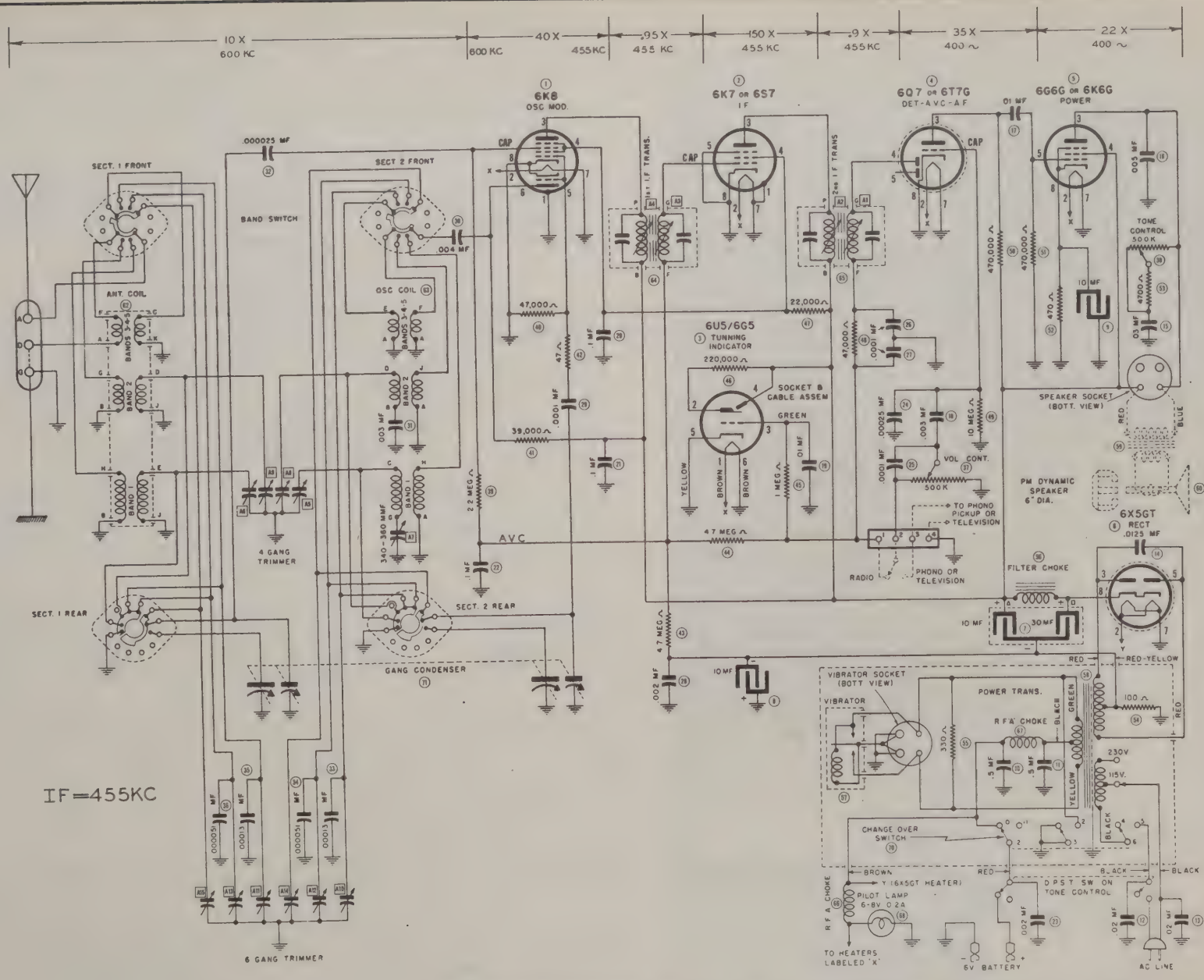
PIN	6X5 GT	
NO.	VOLT.	RES.
1	0V.	INF.
2	6.3V. AC	.1Ω
3	190V. AC	365Ω
4	0V.	INF.
5	190V. AC	355Ω
6	0V.	INF.
7	0V.	0Ω
8	200V. DC	100 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



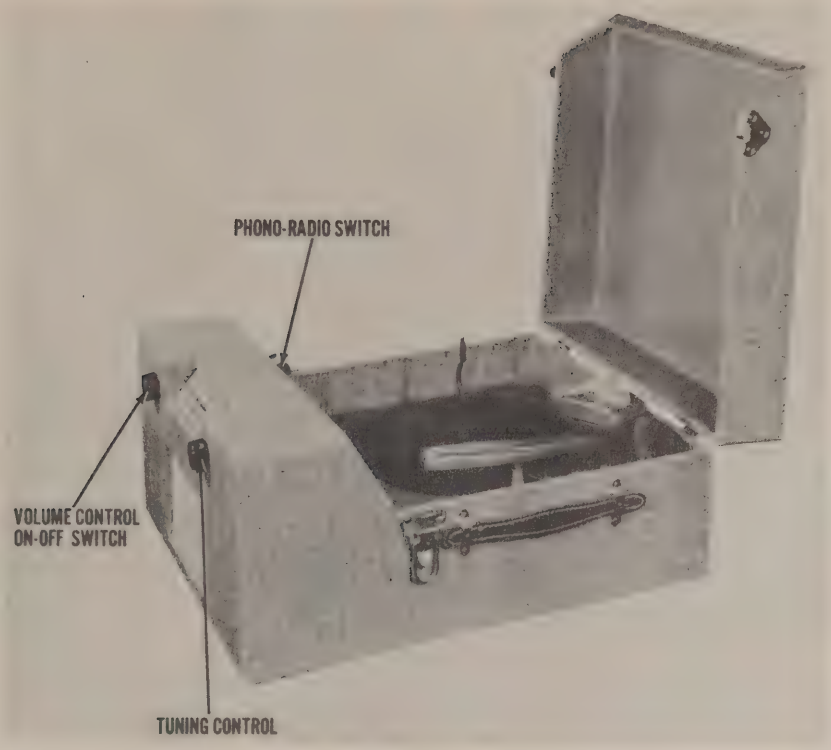
DIAL CORD DRIVE



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE 4712-26

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

SIMPLON
MODEL CA-5



SIMPLON
MODEL CA-5

SIMPLON MODEL CA-5

TRADE NAME	Simplon, Model CA-5
MANUFACTURER	Industrial Electronic Corp,, 32 33rd St., Brooklyn 32, N.Y.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	538-1785KC RATING .200 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD. capacitor in series with low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to ext. ground lug.	1785KC	"	"	A5	Adjust for maximum output.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

DISASSEMBLY INSTRUCTIONS

1. Remove set screws and remove two control knobs. Remove one push on type control knob.
2. Remove two lock nuts holding control shafts.
3. Remove four wood screws holding cover board over back of chassis. Remove cover.
4. Remove four wood screws holding phono platform in cabinet.
5. Remove two wood screws holding chassis to cabinet.
6. Lift phono out of cabinet.
7. Remove phono motor plug.
8. Unsolder phono pickup leads from chassis.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

SIMPLON MODEL CR-1

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SIMPLON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SIMPLON PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150		EZ42215	TN129	DSB-403020-150	TA-240	PRSA150-40-20	Filter - Red
B	20	150							" - Blue
C	20	150					UT-201	PRS150-20	" - "
7	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Line Filter
8	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Output Plate Bypass
9	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Audio Coupling
10	.002	400		DT6D2	TP405	S-6-002	TC-22	484-002	" "
11	.1	400		DT4F1	TP418	S-4-1	TC-1	484-.1	AVC Filter
12	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Output Grid Filter
13	200	500		5W5T2	MC237	MO.5-32	1FM-32	1468-0002	Diode Filter
14	50	500		5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Capacitor
40	500	500		5W5T5	MC240	MO.5-35	1FM-35	1468-0005	Tone Compensation
43	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	Phono Pickup Isol.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SIMPLON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15A	500KΩ	1	PT-109W	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 15A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

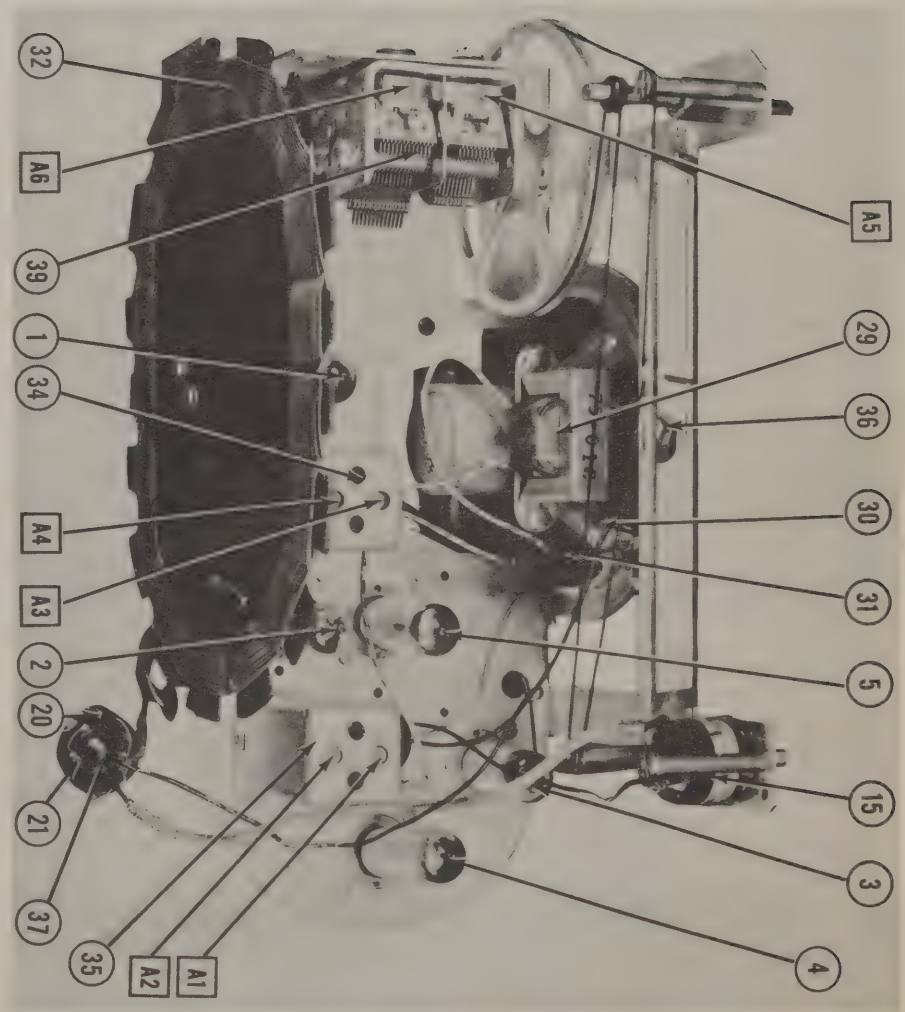
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SIMPLON PART No.	IRC PART No.	IDENTIFICATION CODES
16	18KΩ	½		BTS-18K	Br.-Gray-Or. Oscillator Grid
17	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AVC Network
18	180Ω	½		BW-½-180	Br.-Gray-Br. IF Cathode
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
20	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Phono Shunt
21	270KΩ	½		BTS-270K	Red-Vi.-Yl. Series Phono
22	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AF Grid
23	270KΩ	½		BTS-270K	Red-Vi.-Yl. AF Plate Load
24	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
25	180Ω	½		BW-½-180	Br.-Gray-Br. Output Cathode
26	680Ω	1		BTA-680	Blue-Gray-Br. Filter
27	180Ω	2		BW-2-180	Br.-Gray-Br. Filter
28	15Ω	½		BW-½-15	Br.-Grn.-Blk. Surge Limiter
41	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Tone Compensation
42	270KΩ	½		BTS-270K	Red-Vi.-Yl. Tone Compensation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SIMPLON PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
29	2000Ω	3.6Ω	145Ω	.85Ω	TR139	A-3376	T22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SIMPLON PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107		
30	PM	3.6Ω	SP105	Mod. P5-V		
	CONE DIA.	VC DIA.				
31	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

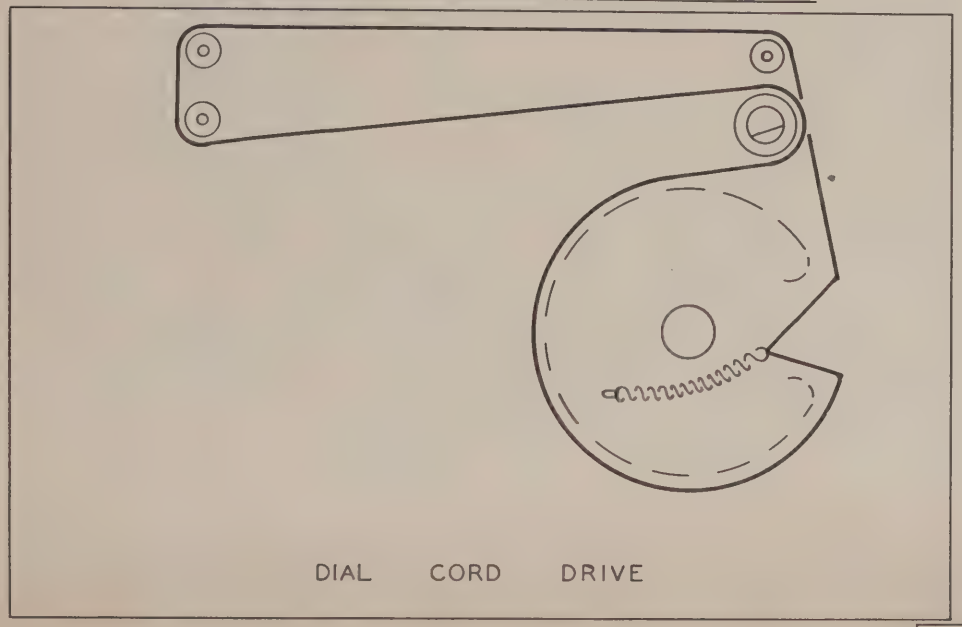
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SIMPLON PART No.	MEISSNER PART No.	
32	Loop Ant.	.1Ω	1.5Ω			
33	Osc. Coil		6Ω		14-1040	
34	Input IF	24Ω	23Ω		16-6658	
35	Output IF	25Ω	25Ω		16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SIMPLON PART No.		
36	Bayonet	6-8	.150	Brown			Type #47

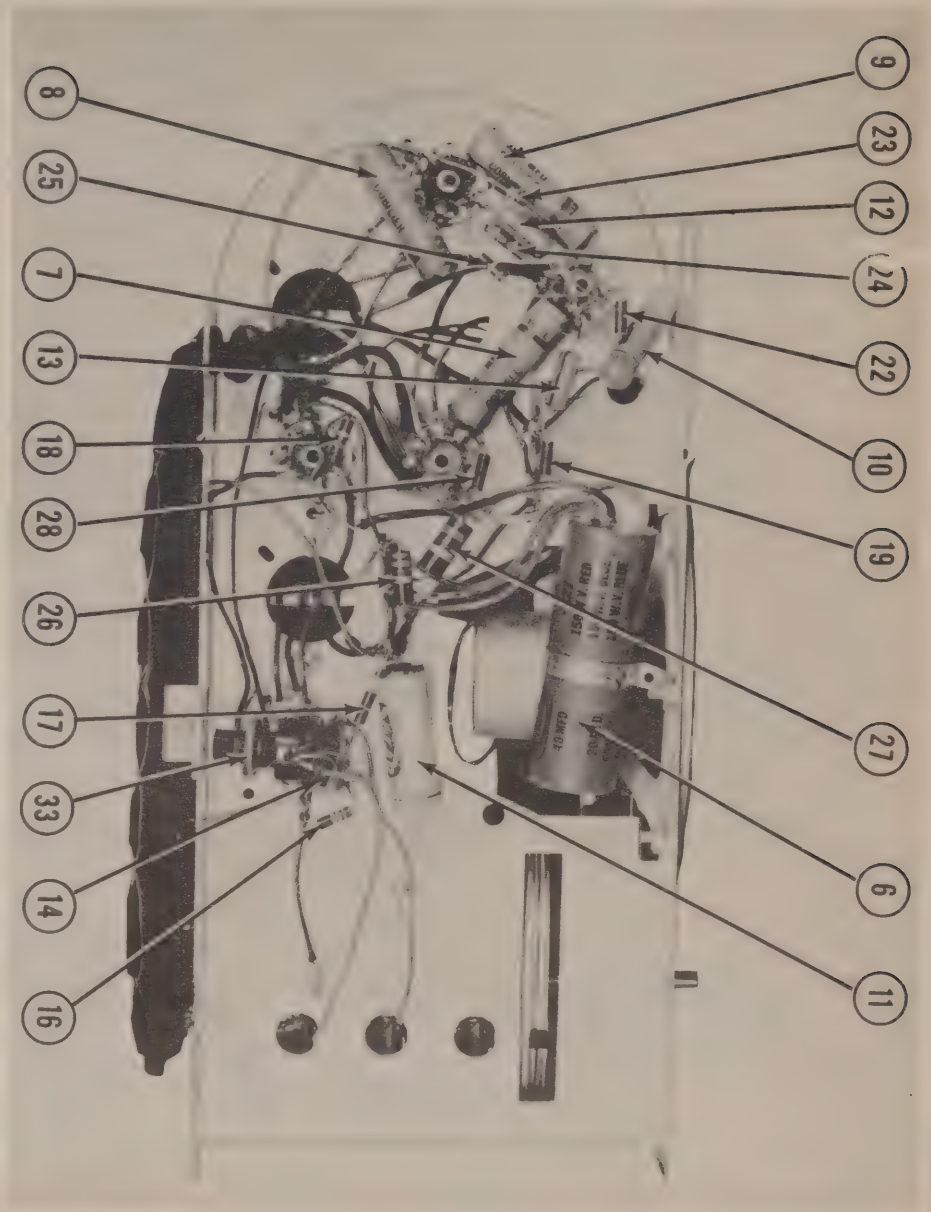
MISCELLANEOUS

ITEM No.	PART NAME	SIMPLON PART No.	NOTES
37	Switch		Radio-Phono
38	Switch		Phono Motor
39	2 Gang Var. Cap.		19-462 MMF, 28-185 MMF

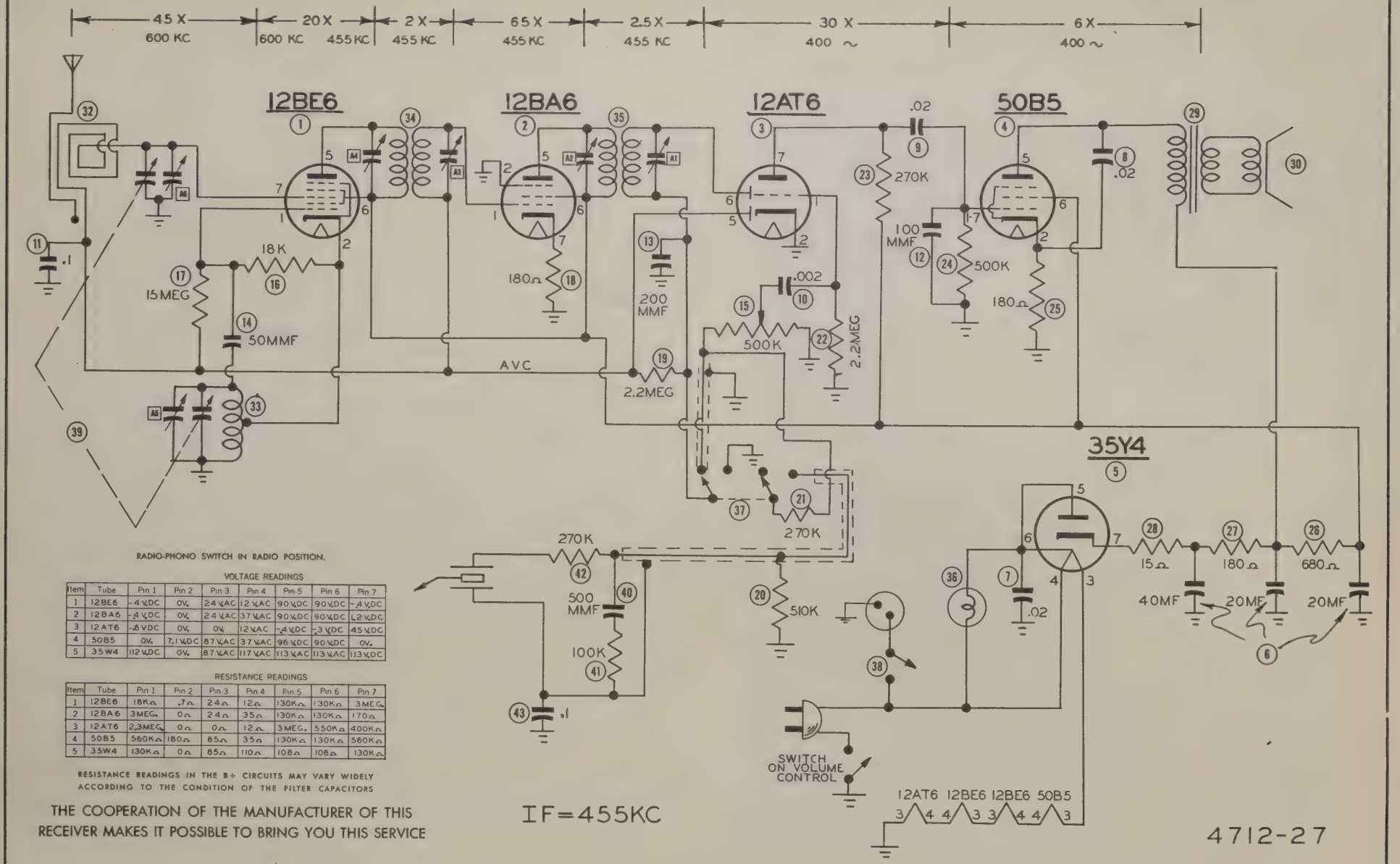


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



SIMPLON
MODEL CA-5



RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-4 VDC	0V.	24 VAC	12 VAC	90 VDC	90 VDC	-.4 VDC
2	12BA6	-4 VDC	0V.	24 VAC	37 VAC	90 VDC	90 VDC	1.2 VDC
3	12AT6	-6 VDC	0V.	0V.	12 VAC	-.4 VDC	-.3 VDC	45 VDC
4	50B5	0V.	7.1 VDC	87 VAC	37 VAC	96 VDC	90 VDC	0V.
5	35W4	112 VDC	0V.	87 VAC	117 VAC	113 VAC	113 VAC	113 VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	18KΩ	.7Ω	24Ω	12Ω	130KΩ	130KΩ	3MEG.
2	12BA6	3MEG.	0Ω	24Ω	35Ω	130KΩ	130KΩ	170Ω
3	12AT6	2.3MEG.	0Ω	0Ω	12Ω	3MEG.	550KΩ	400KΩ
4	50B5	560KΩ	180Ω	85Ω	35Ω	130KΩ	130KΩ	560KΩ
5	35W4	130KΩ	0Ω	85Ω	110Ω	108Ω	108Ω	130KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

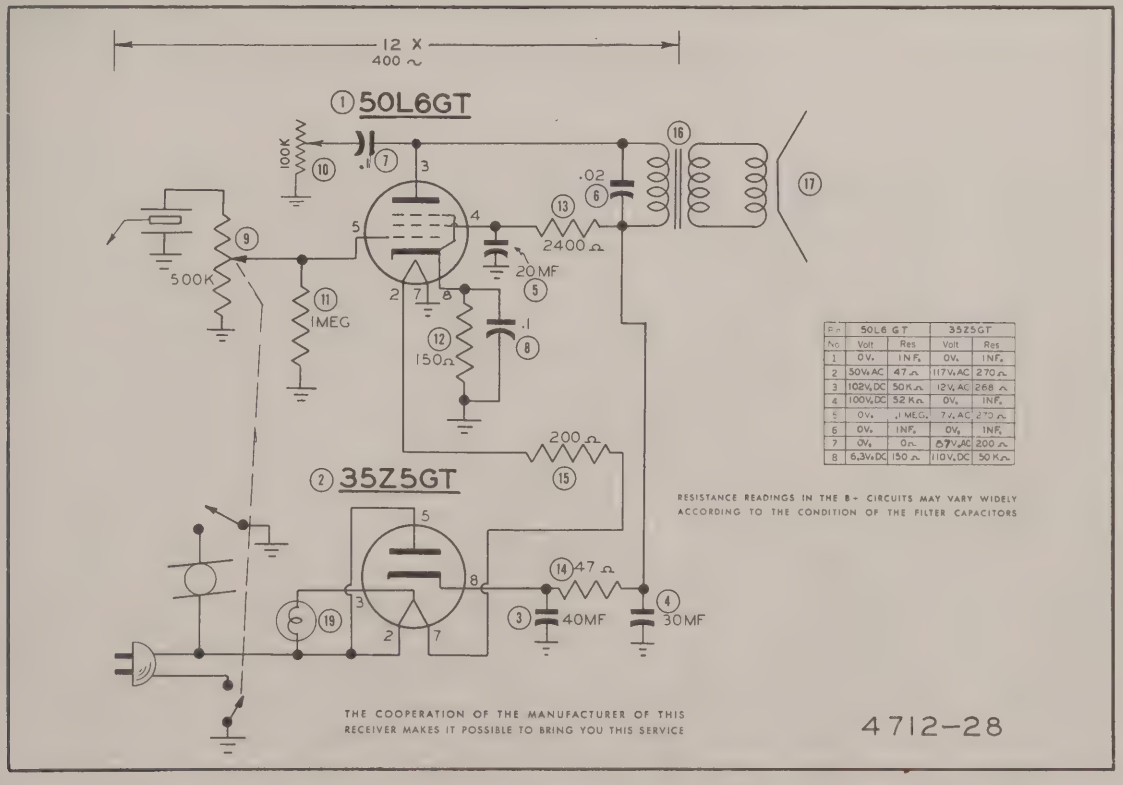
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TELEVOX MODEL 27-P-T

TRADE NAME	Televox, Model 27-P-T
MANUFACTURER	Televox, Inc., 451 S. 5th Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated Phonograph with 2 Tube Amplifier & Speaker
TUBES (TWO)	Types, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .200 Amp. @ 117 Volts AC



Pin No	50L6 GT Volt	50L6 GT Res	35Z5GT Volt	35Z5GT Res
1	0V.	INF.	0V.	INF.
2	50V.AC	47Ω	117V.AC	270Ω
3	102V.DC	50KΩ	12V.AC	268Ω
4	100V.DC	52KΩ	0V.	INF.
5	0V.	.1 MEG.	7V.AC	270Ω
6	0V.	INF.	0V.	INF.
7	0V.	0Ω	87V.AC	200Ω
8	6.3V.DC	150Ω	110V.DC	50KΩ

RESISTANCE READINGS IN THE B- CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELEVOX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Power Output		50L6GT	7AC	
2	Rectifier		35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELEVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
3	40	150		BR40-15	TC48	M-40-150	UT-401	PRS150-40	Filter
4	30	150		BR30-15	TC47	M-30-150	UT-301	PRS150-30	"
5	20	150		BR20-15	TC45	M-20-150	UT-201	PRS150-20	"
6	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
7	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	Tone Compensation
8	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	Cath. Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELEVOX PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
9A	500KΩ	1		MR48	D13-133	AM-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 9A per instructions
C	Switch			M26	41	SW-A	" " " " "
10A	100KΩ	1		MR41	D11-128	M-49-S	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 10A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELEVOX PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
11	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
12	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
13	2400Ω	1		BTA-2400	Red-Vi.-Red Output Screen Dropping
14	47Ω	½		BW-½-47	Yl.-Vi.-Blk. Filter
15	200Ω	10		AB-200	Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TELEVOX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
16	2400Ω	3.2Ω	145Ω	.4Ω		A-3876	T22S45		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: TELEVOX PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
17	PM	3.2Ω		Mod. P5-X		
	CONE DIA.	VC DIA.				
18	4-3/4"	1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT		

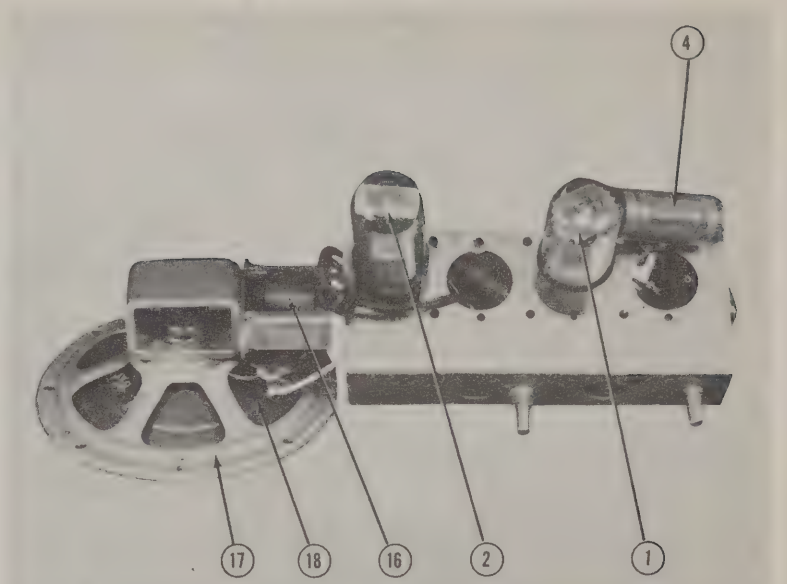
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: TELEVOX PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
1v	Bayonet	6-8	0.15	Brown			Type 47

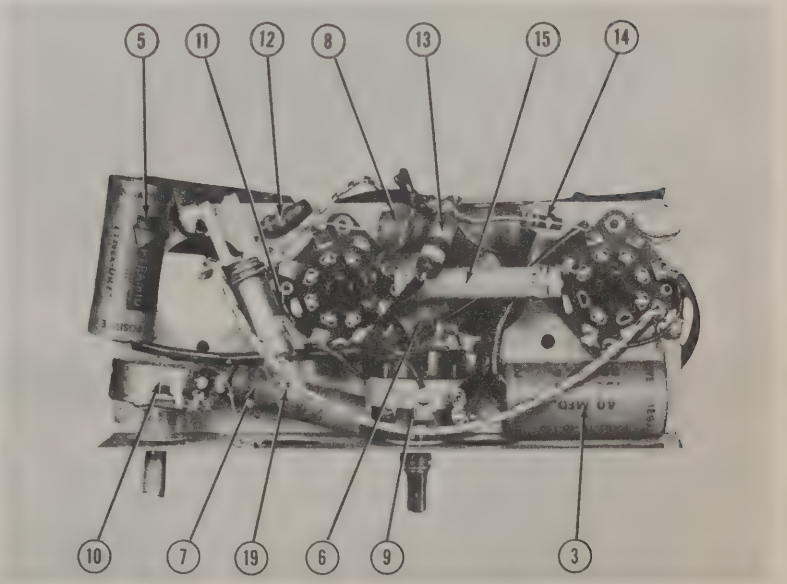
MISCELLANEOUS

ITEM No.	PART NAME	TELEVOX PART No.	NOTES
	Crystal Cartridge		ASTATIC Type L-72-A

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



TELEVOX MODEL RP

TRADE NAME Televox, Model RP
MANUFACTURER Telvox, Inc., 451 S. 5th Ave., Mt. Vernon, N.Y.
TYPE SET AC Operated Phono-Radio Combination with Loop Antenna
TUBES (FIVE) Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.

POWER SUPPLY 110-120 Volts AC
TUNING RANGE—BROADCAST 540-1600KC RATING .250 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if avaiable. If not connect a .1 MFD capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1600KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Loosen four set screws and remove four control knobs.
2. Remove four wood screws holding changer in cabinet.
3. Remove two wood screws holding cover board over back of cabinet.
4. Remove four wood screws holding changer mounting board in cabinet.
5. Remove one wood screw from bottom of cabinet holding chassis in cabinet.
6. Unsolder leads from chassis to speaker and remove changer and chassis from cabinet.
7. Remove two wood screws holding speaker in cabinet. Remove speaker.
8. Unsolder phono pickup leads from changer.
9. Unsolder phono motor leads from changer.
10. Remove two wood screws holding loop antenna. Remove loop.

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PARTS LIST AND DESCRIPTIONS

TELEVOX MODEL RF

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELEVOX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELEVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150		BRD4215	2N514	M-2x40-150	TA-240	PRSA150-40-20	Filter - Red
B	20	150						"	" - Green
7	30	150		BR3015	TC47	M-30-150	UT-301	PRS150-30	"
8	20	150		BR2015	TC45	M-20-150	UT-201	PRS150-20	Cath. Bypass
9	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Output Plate Bypass
10	.003	400		DT6D3	TP406	S-6-003	TC-23	484-003	Tone Compensation
11	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
12	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	" "
13	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	RF Bypass Pwr. Supp.
14	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	IF Cath. Bypass
15	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
16	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
17	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
18	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
19	470	500		5W5T5	MC245	MO.5-347	1FM-35	1468-0005	Phono Coupling
20	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELEVOX PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 21A per instructions
C	Switch			M26	41	SW-A	" " " "
22A	100KΩ	1		MR41	D11-128	M-49-S	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 22A per instructions

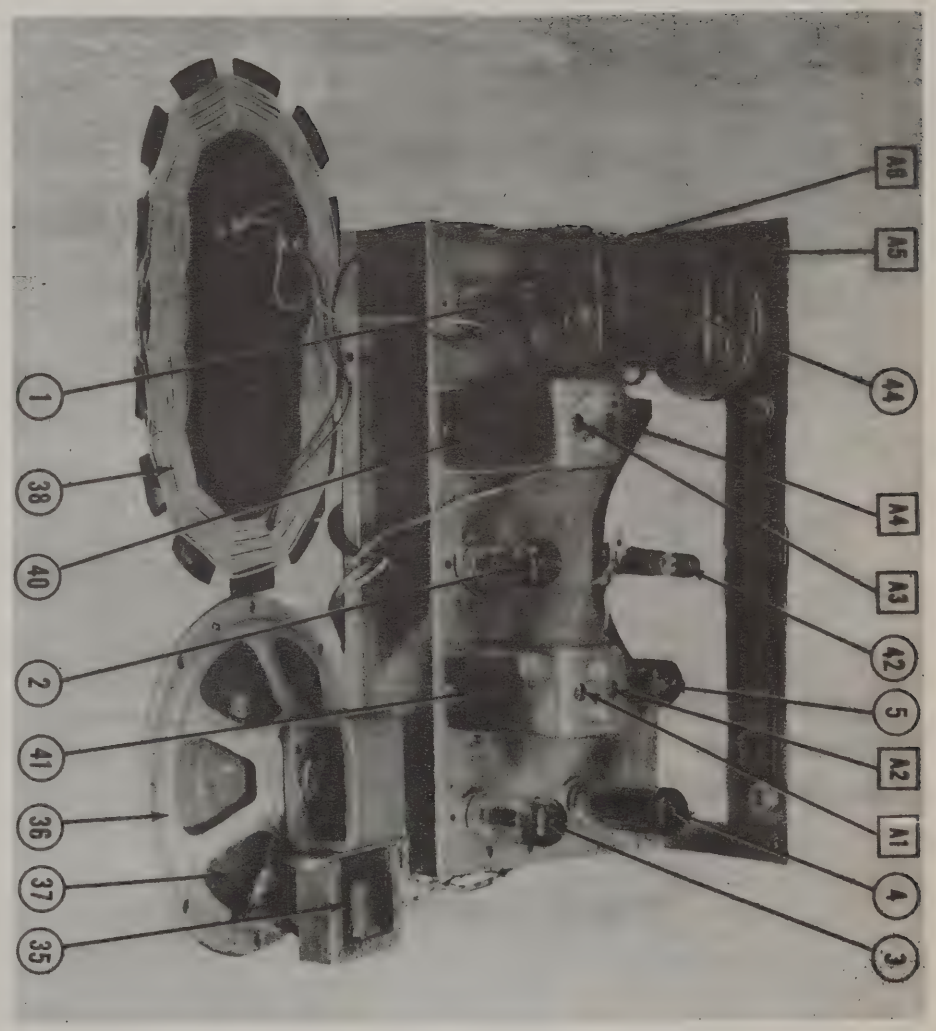
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELEVOX PART No.	IRC PART No.	IDENTIFICATION CODES
23	27KΩ	½		BTS-27K	Red-Vi.-Or. Oscillator Grid
24	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
25	68Ω	½		BW-½-68	Blue-Gray-Blk. IF Cathode
26	50KΩ	½		BTS-47K	Grn.-Blk.-Or. Diode RF Filter
27	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. Series Phono
28	10KΩ	½		BTS-10K	Br.-Blk.-Or. AF Cathode
29	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Grid
30	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
31	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
32	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
33	1000Ω	½		BTS-1000	Br.-Blk.-Red Filter
34	120Ω	2		BW-2-120	Br.-Red-Br. Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TELEVOX PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
35	2400Ω	3.3Ω	145Ω	.4Ω		A-3876	T22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: TELEVOX PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
36	PM	2.3Ω		Mod. P5-X		
	CONE DIA.	VC DIA.				
37	4-3/4"	1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT		

R F COILS

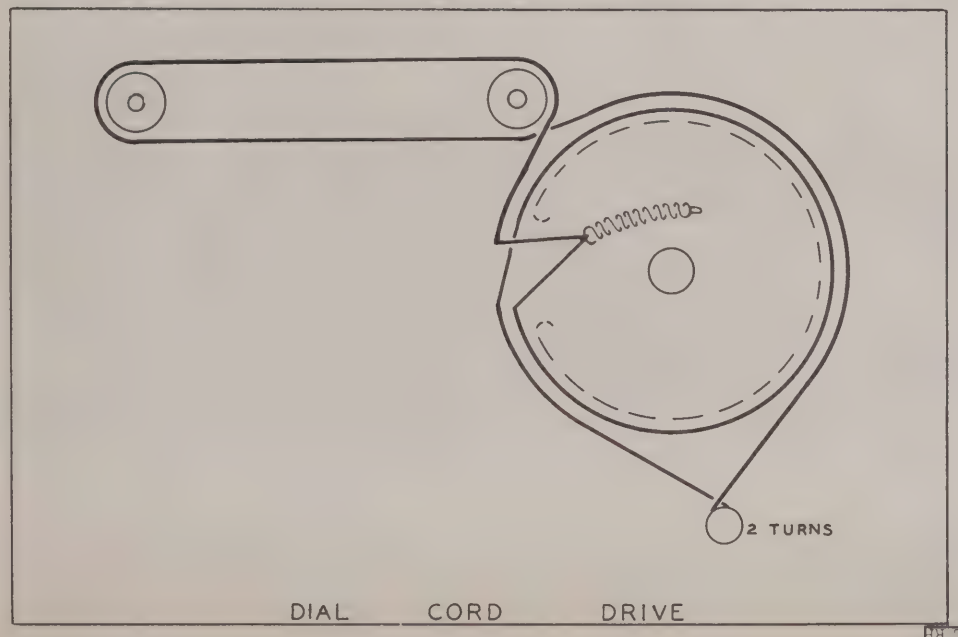
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TELEVOX PART No.	MEISSNER PART No.	
38	Loop Ant.		1.2Ω			
39	Osc. Coil		6Ω		14-1040	
40	Input IF	18.5Ω	18.5Ω		16-6658	
41	Output	29Ω	27Ω		16-6660	

DIAL LIGHT

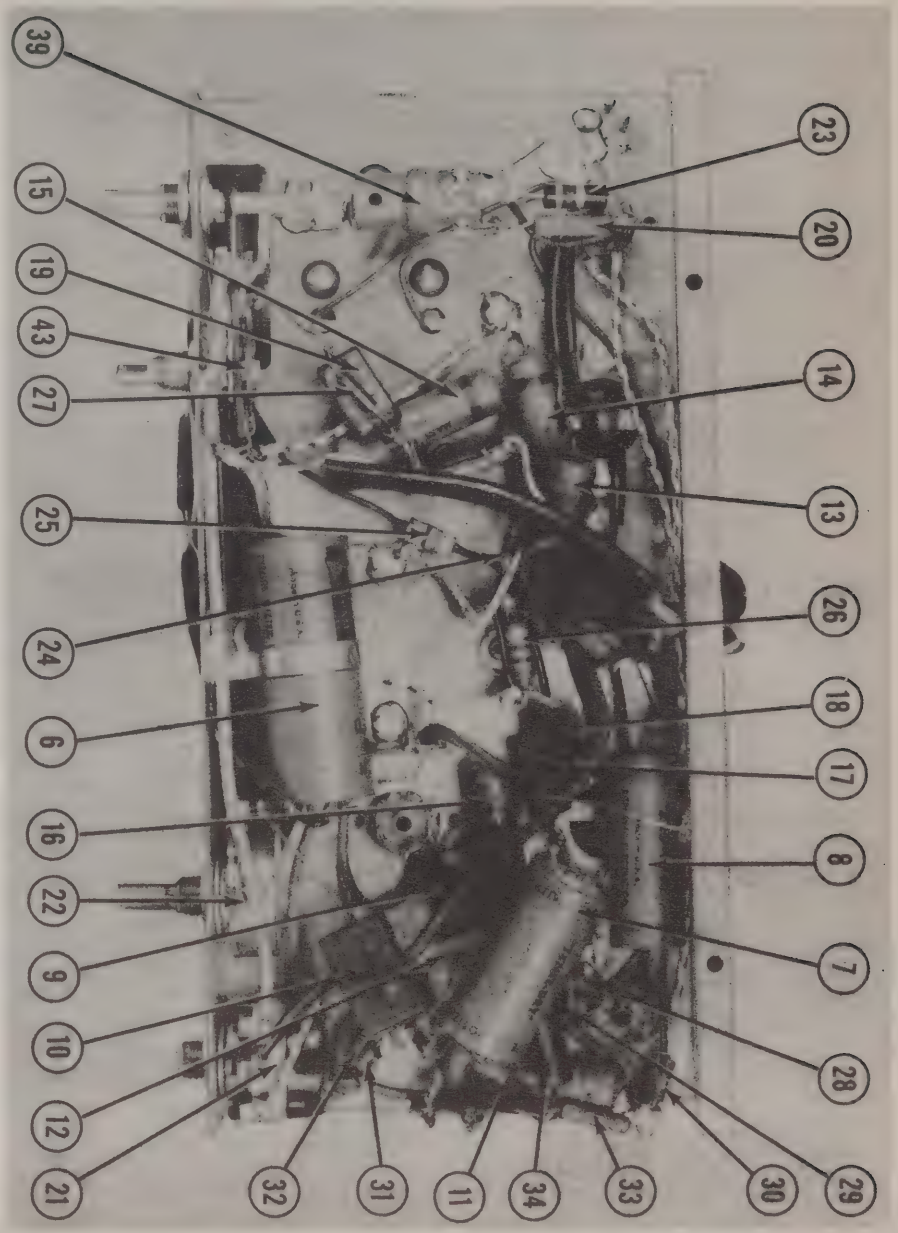
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: TELEVOX PART No.		INSTALLATION NOTES
42	Bayonet	6-8	0.15A	Brown			Type 47

MISCELLANEOUS

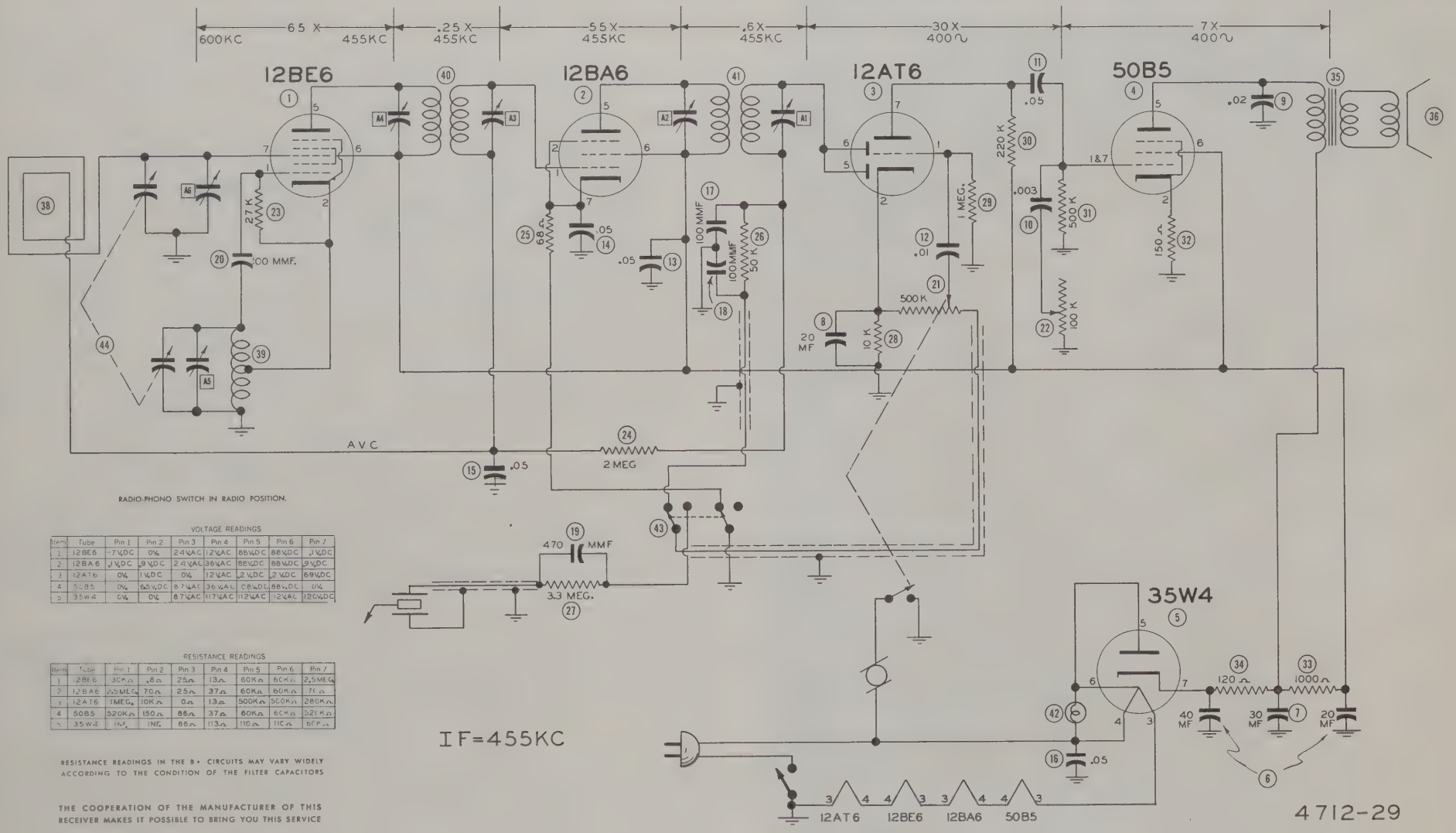
ITEM No.	PART NAME	TELEVOX PART No.	NOTES
43	Switch		Radio-Phono
44	2 Gang Var. Cap.		25-474 MMF, 37-204 MMF



CHASSIS—TOP VIEW



TELEVOX MODEL RH



RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-7 VDC	0V.	24 VAC	12 VAC	88 VDC	88 VDC	1 VDC
2	12BA6	1 VDC	9 VDC	24 VAC	36 VAC	88 VDC	88 VDC	9 VDC
3	12AT6	0V.	1 VDC	0V.	12 VAC	2 VDC	2 VDC	69 VDC
4	50B5	0V.	65 VDC	87 VAC	36 VAC	0	88 VDC	0V.
5	35W4	0V.	0V.	87 VAC	117 VAC	112 VAC	12 VAC	126 VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	30K Ω	.8 Ω	25 Ω	13 Ω	60K Ω	60K Ω	2.5MEG Ω
2	12BA6	2.5MEG Ω	70 Ω	25 Ω	37 Ω	60K Ω	60K Ω	70 Ω
3	12AT6	1MEG Ω	10K Ω	0 Ω	13 Ω	500K Ω	500K Ω	280K Ω
4	50B5	520K Ω	150 Ω	86 Ω	37 Ω	60K Ω	60K Ω	52K Ω
5	35W4	INF. Ω	INF. Ω	86 Ω	113 Ω	110 Ω	110 Ω	60K Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TEMPLE
MODEL G-619

TEMPLE
MODEL G-619

TEMPLE MODEL G-619

TRADE NAME	Temple, Model G-619
MANUFACTURER	Templetone Radio Mfg. Corp., Garfield Ave., New London, Conn.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .250 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to 1st reference dot on left end of dial backplate. Use isolation transformer if available. If not, connect a .1 MFD. capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1700KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1550KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TEMPLE MODEL G-619

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TEMPLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TEMPLE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150		EZ5515	2N521	M-2x50-150	TA-505	PRSA150-50-50	Filter - Red
B	50	150						" "	- Green
8	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	Line Filter
9	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Output Plate Bypass
10	.005	400		DT6D5	TP408	S-6-005	TC-25	484-005	Audio Coupling
11	.005	400		DT6D5	TP408	S-6-005	TC-25	484-005	" "
12	.003	400		DT6D3	TP406	S-6-003	TC-23	484-003	Tone Compensation*
13	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
14	.25	400		DT4P25	TP430	S-4-25	TC-2	484-.25	Line Isolation
15	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	RF Bypass Pwr. Supp.
16	220	500		5W5T2	MC237	MO.5-322	1FM-32	1468-0002	Output Grid Filter
17	10	500		5W5T1	MC215	MO.5-41	MS-41	1468-00001	Fixed Trimmer
18	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor
19	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling

*Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	500KΩ	1	RP5-2	MK401	D13-133	AM-60-Z	Volume Control-See Note
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 20A per instructions
C	Switch		" "	M26	41	SW-A	" " " " " "

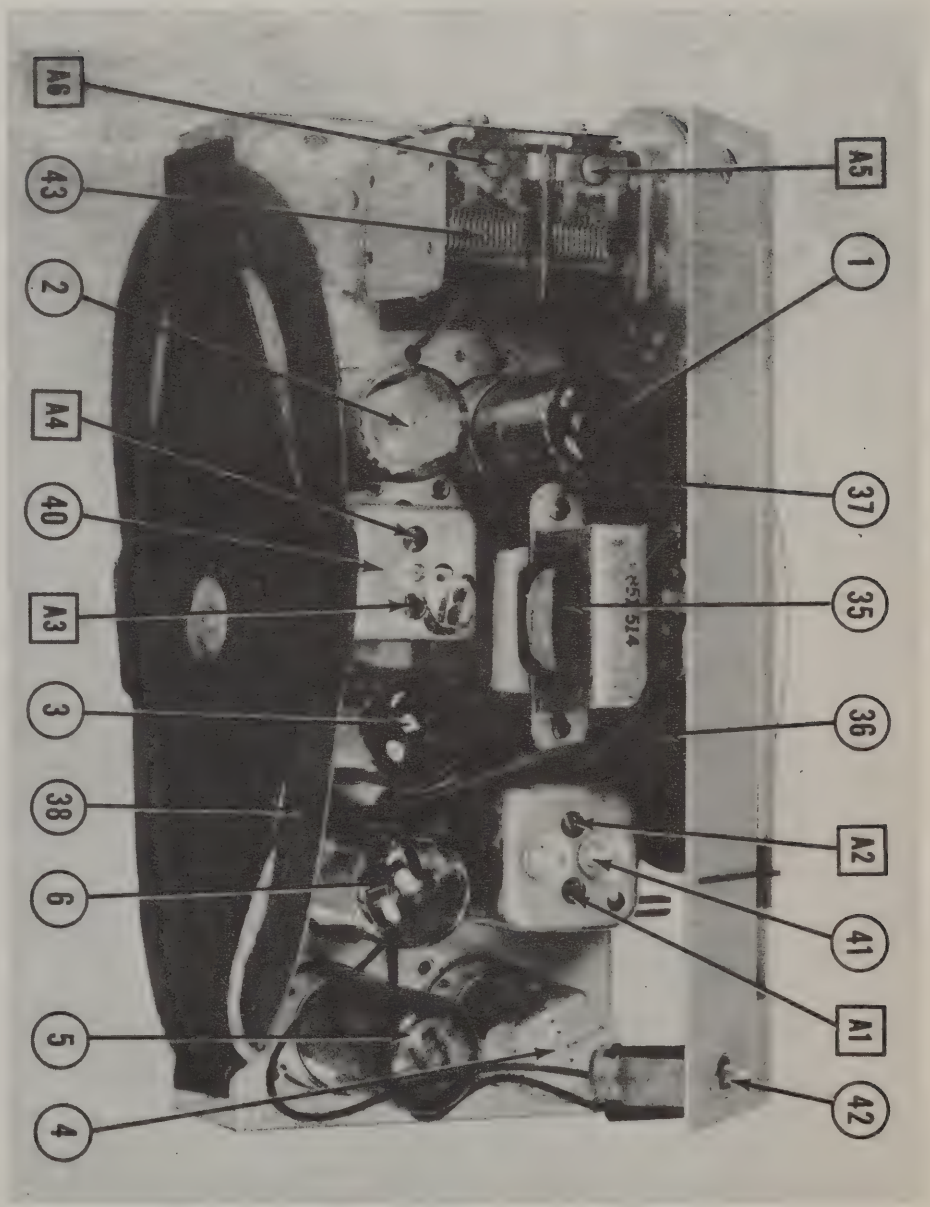
Note-Some models may use tapped control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	IRC PART No.	IDENTIFICATION CODES
21	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolation
22	2200Ω	½		BTS-2200	Red-Red-Red RF Plate Load-See Note 1
23	4700Ω	½		BTS-4700	Yl.-Vi.-Red Converter Grid-See Note 2
24	10KΩ	½		BTS-10K	Br.-Blk.-Or. Oscillator Grid-See Note 3
25	10KΩ	½		BTS-10K	Br.-Blk.-Or. Oscillator Grid
26	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
27	33KΩ	½		BTS-33K	Or.-Or.-Or. Tone Compensation
28	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid-See Note 4
29	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
30	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid-See Note 5
31	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Output Cathode
32	1200Ω	2		BT-2-1200	Br.-Red-Red Filter
33	33Ω	1		BW-1-33	Or.-Or.-Blk. Surge Limiter-See Note 6
34	150Ω	1		BW-1-150	Br.-Grn.-Br. Pilot Light Shunt

Note 1 - Some models use 330Ω in this application. IRC replacement BTS-3300.
Note 2 - Some models use 5600Ω in this application. IRC replacement BTS-5600.
Note 3 - Some models 12KΩ in this application. IRC replacement BTS-12K.
Note 4 - Some models 3.9 Meg. in this application. IRC replacement BTS-3.9 Meg.
Note 5 - Some models use 270KΩ in this application. IRC replacement BTS-270K.
Note 6 - Some models use 15Ω in this application. IRC replacement BW-1-15.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TEMPLE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
35	1860Ω	3.3Ω	150Ω	.58Ω	851.514	A-3676	T22S45		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TEMPLE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105		
36	PM	3.3Ω	EH6-2	Mod. P5-X		
	CONE DIA.	VC DIA.				
37	4-3/4"	1/2"	NOT REALILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

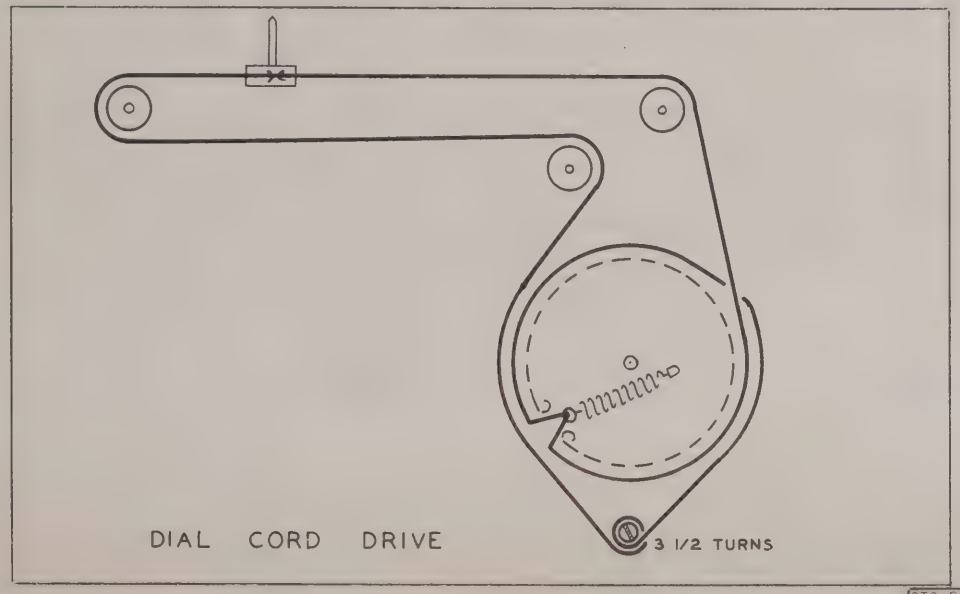
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	TEMPLE PART No.	MEISSNER PART No.
38	Loop Ant.	.1Ω	1.2Ω		
39	Osc. Coil		5Ω	A-LO-2	14-1040
40	Input IF	15Ω	15Ω	TM2-1	16-6658
41	Output IF	14.5Ω		TM2-3	16-6670

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TEMPLE PART No.		
42	Bayonet	6-8	0.15	Brown			Type 47

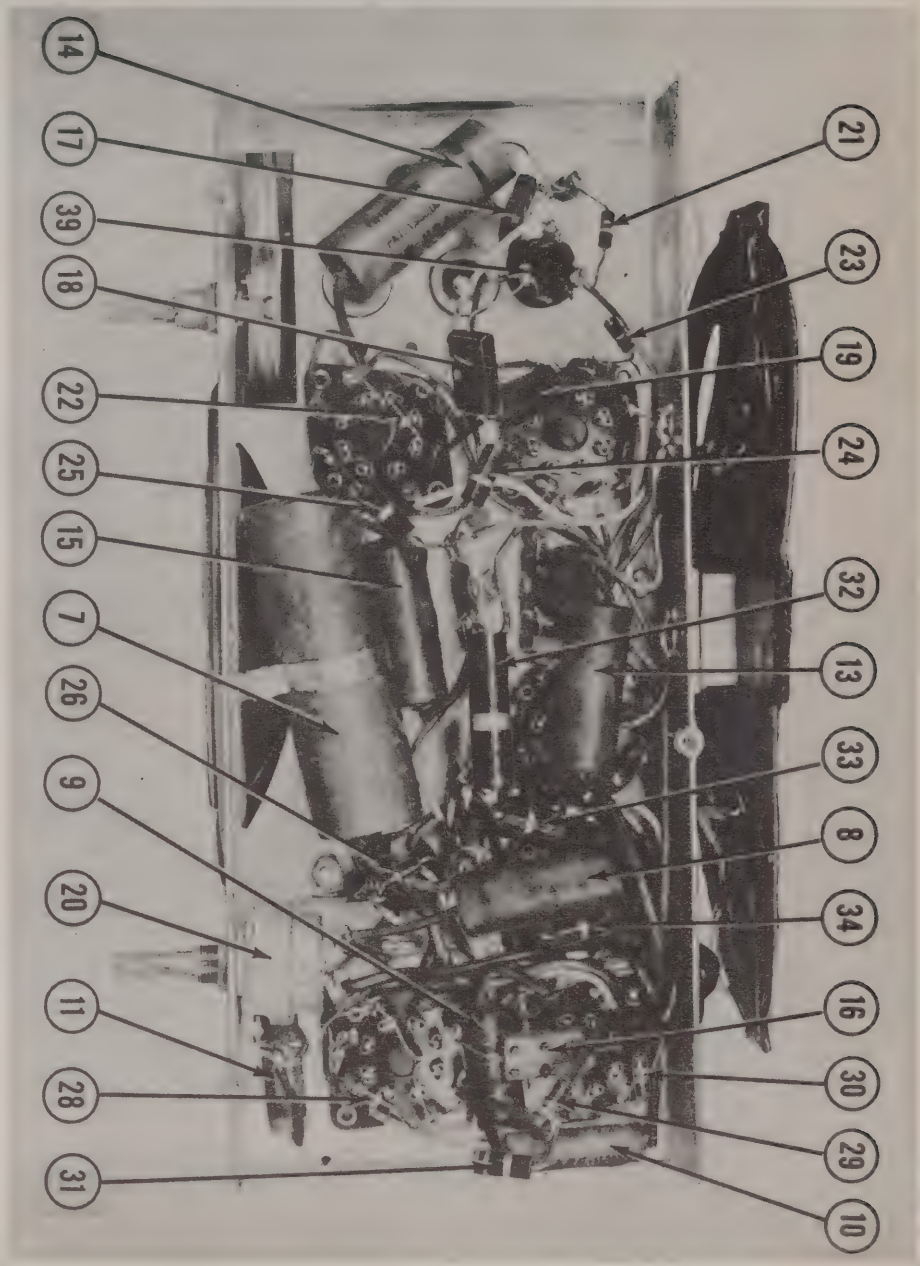
MISCELLANEOUS

ITEM No.	PART NAME	TEMPLE PART No.	NOTES
43	2 Gang Var.Cap.	A-CV6	25-448 MMF, 21-192 MMF

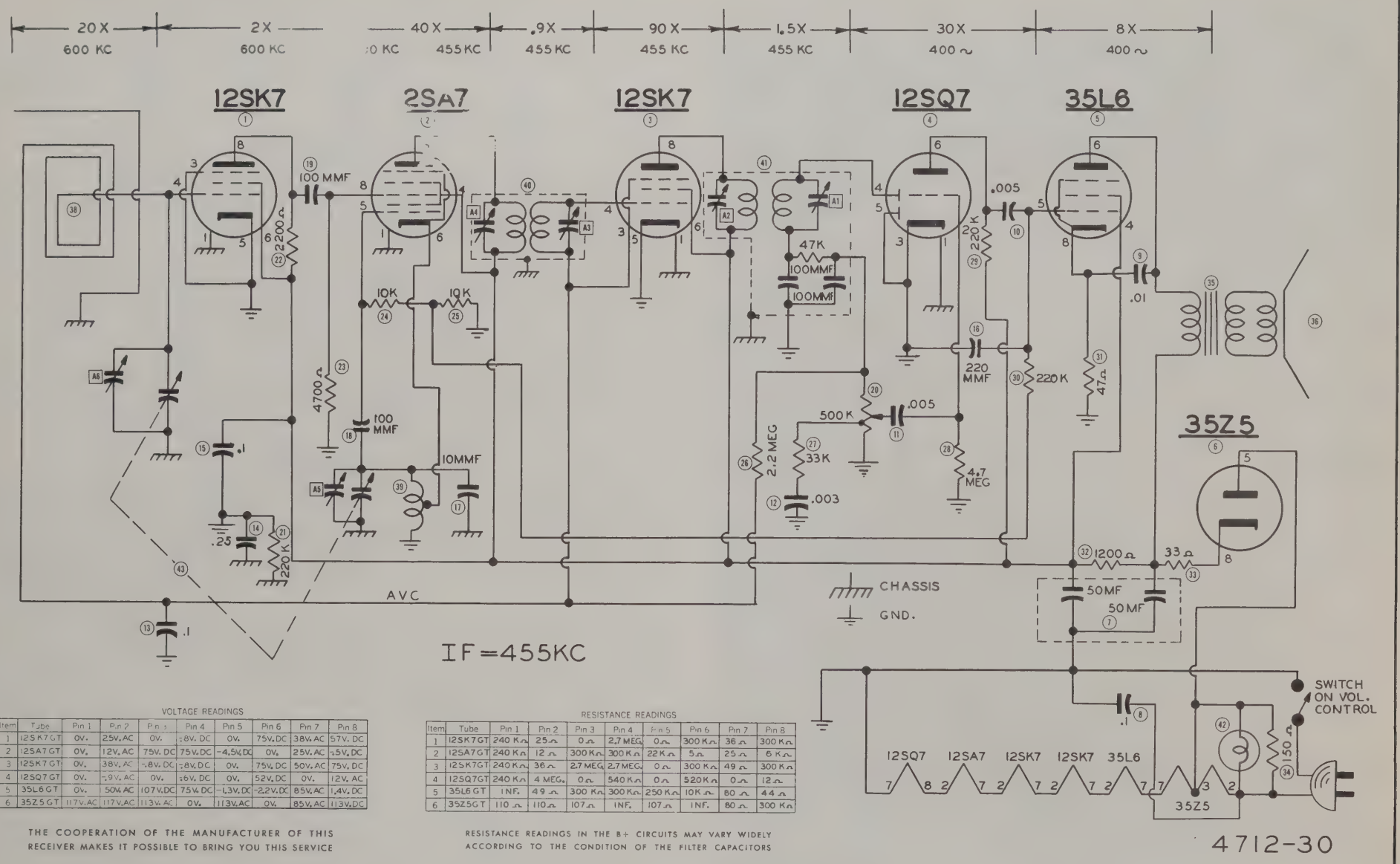


TEMPLE MODEL G-615

CHASSIS—BOTTOM VIEW



TEMPLE MODEL G-615



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	2.5V. AC	0V.	-8V. DC	0V.	75V. DC	38V. AC	57V. DC
2	12SA7GT	0V.	12V. AC	75V. DC	75V. DC	-4.5V. DC	0V.	25V. AC	-.5V. DC
3	12SK7GT	0V.	38V. AC	-.8V. DC	-.8V. DC	0V.	75V. DC	50V. AC	75V. DC
4	12SQ7GT	0V.	-.9V. AC	0V.	-.6V. DC	0V.	52V. DC	0V.	12V. AC
5	35L6GT	0V.	50V. AC	107V. DC	75V. DC	-1.3V. DC	-2.2V. DC	85V. AC	1.4V. DC
6	35Z5GT	117V. AC	117V. AC	113V. AC	0V.	113V. AC	0V.	85V. AC	113V. DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

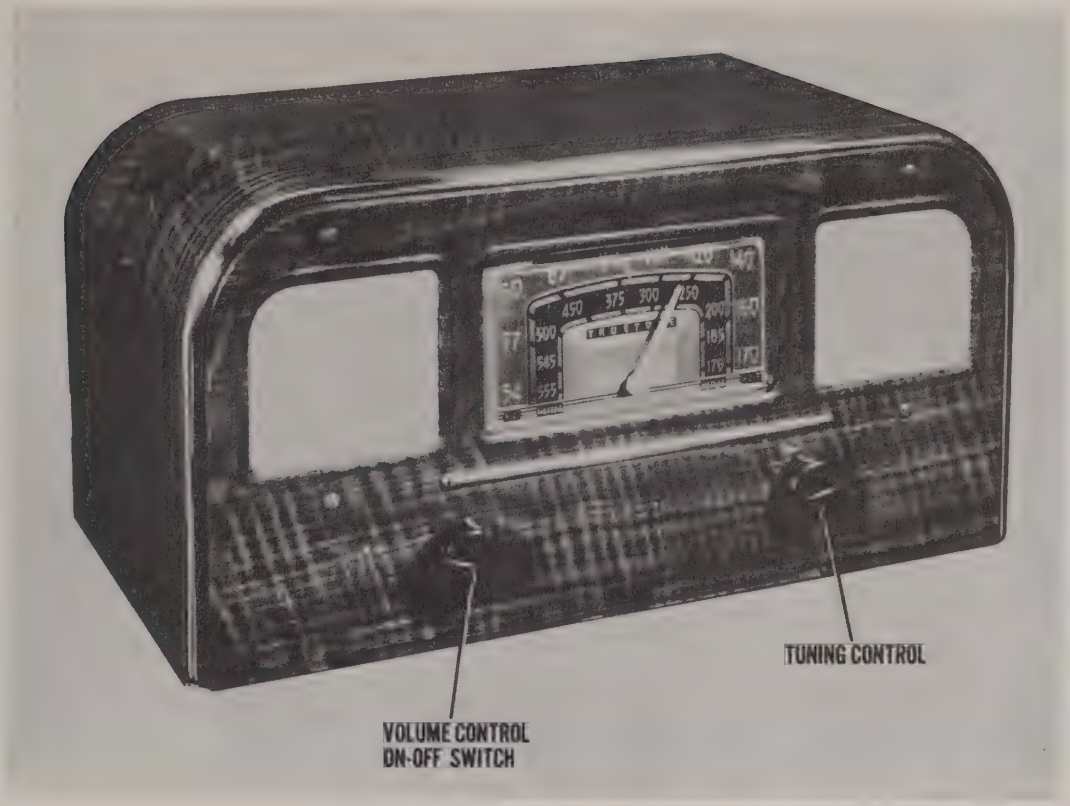
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	240 KΩ	25Ω	0Ω	2.7 MEG.	0Ω	300 KΩ	36Ω	300 KΩ
2	12SA7GT	240 KΩ	12Ω	300 KΩ	300 KΩ	22 KΩ	5Ω	25Ω	6 KΩ
3	12SK7GT	240 KΩ	36Ω	2.7 MEG.	2.7 MEG.	0Ω	300 KΩ	49Ω	300 KΩ
4	12SQ7GT	240 KΩ	4 MEG.	0Ω	540 KΩ	0Ω	520 KΩ	0Ω	12Ω
5	35L6GT	INF.	49Ω	300 KΩ	300 KΩ	250 KΩ	10K Ω	80Ω	44Ω
6	35Z5GT	110Ω	110Ω	107Ω	INF.	107Ω	INF.	80Ω	300 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRUETONE
MODEL D 2665 (BATTERY OPERATED)



TRUETONE
MODEL D 2665 (BATTERY OPERATED)

TRUETONE MODEL D2665

TRADE NAME	Truetone, Model D2665 (Factory Model 4B114-Series A)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S5 Power Output.
POWER SUPPLY RATING	1-1/2 Volt "A" Supply & 90 Volt "B" Supply in Pack Form 260 MA @ 1.5 Volts DC & 12 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1700KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) 1R5. Low side to chassis.	455KC	Tuning slugs out completely	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	.1 MFD.	"	1700KC	"	"	A5	" " " "
3	200MMFD	High side to ext. ant. lead. Low side to chassis.	"	"	"	A6	" " " "
4	200MMFD	"	1400KC	Tune for maximum output.	"	Ant.Coil (35)	Adjust position of ant. coil for maximum output. Repeat Steps 3 and 4 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D2618

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	10	150	A-8C-10528	UP2215	FP211	DY-2x10-150	EL-221	AF44D	■ Pwr. Supp. Bypass
B	10	150							▲ Screen Bypass
6	.002	600	C-8D-10784	DT6D2	TF405	S-6-002	TC-22	684-002	Output Plate Bypass
7	.006	600	C-8D-10785	DT6D6	TP409	S-6-006	TC-26	684-006	Audio Coupling
8	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	Audio Screen Bypass
9	.003	600	C-8D-10786	DT6D3	TP406	S-6-003	TC-23	684-003	Audio Coupling
10	.05	200	C-8D-10770	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
11	.25	200	C-8D-10775	DT4P2	TP430	S-4-25	TC-2	484-.25	Pwr. Supp. Bypass
12	.1	200	C-8D-10771	DT4P1	TP429	S-4-1	TC-1	484-.1	Conv. Screen Bypass
13	.001	600	C-8D-10787	DT6D1	TP404	S-6-001	TC-21	684-001	AVC Filter
14	47	500	C-8F3-6	5W5Q5	MC225	M0.5-447	1FM-45	1468-00005	Osc. Grid Capacitor
15	45		B-8G-10426						Fixed Trimmer Cer.
16	330	500	C-8F3-11	5W5T3	MC241	M0.5-333	1FM-33	1468-0003	Ext. Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	1 Meg.	1	A-10B-10368	MK402	D13-137	AM-63-2	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

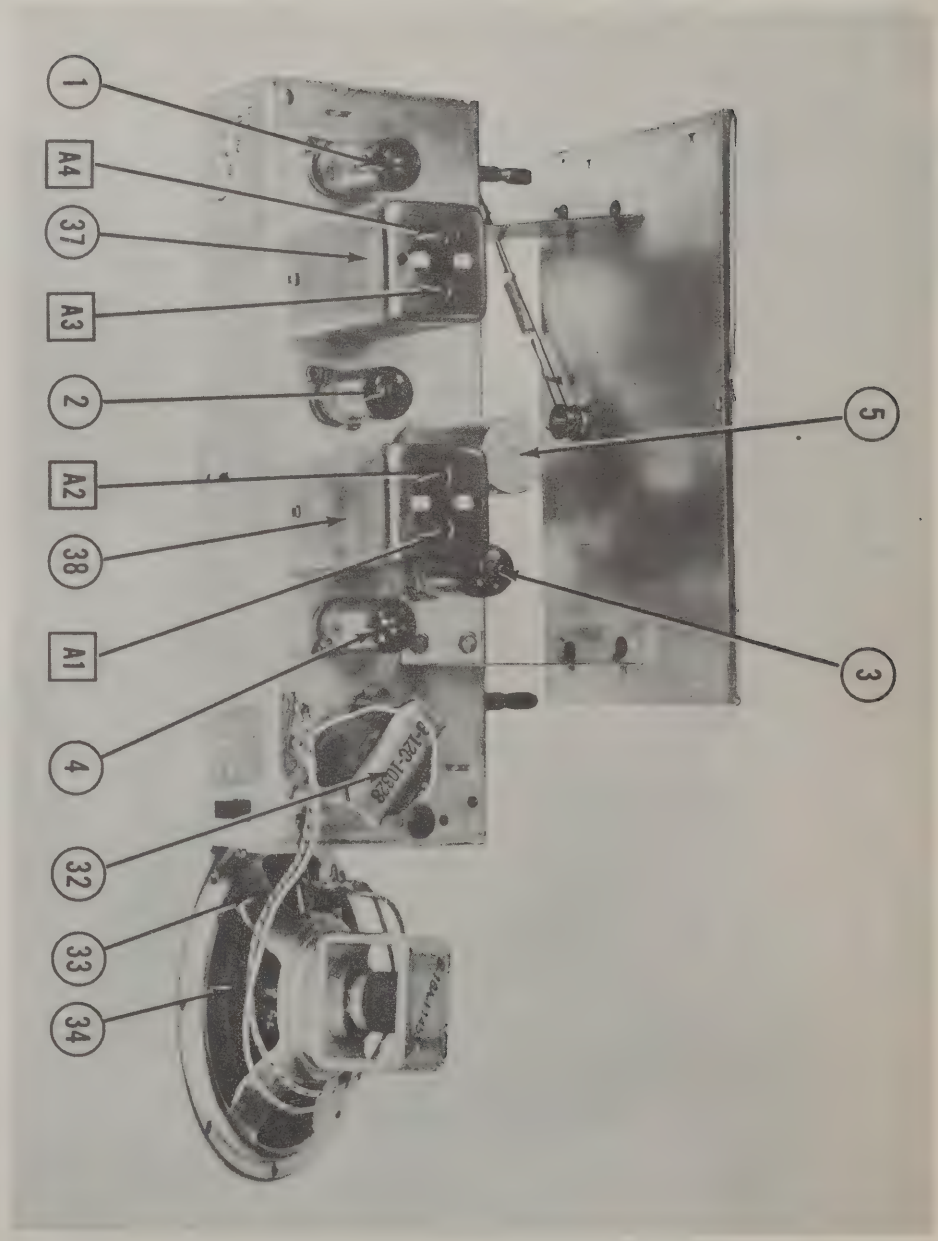
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
18	10KΩ	½	C-9B1-74	BTS-10K	Br.-Blk.-Or. Antenna Loading
19	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
20	100KΩ	½	C-9B1-86	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
21	15KΩ	½	C-9B1-76	BTS-15K	Br.-Grn.-Or. Oscillator Anode Dropping
22	18KΩ	½	C-9B1-77	BTS-18K	Br.-Gray-Or. Oscillator Coil Shunt
23	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
24	82KΩ	½	C-9B1-85	BTS-82K	Gray-Red-Or. Series Volume Control
25	10 Meg.	½	C-9B1-37	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
26	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
27	820KΩ	½	C-9B1-97	BTS-820K	Gray-Red-Yl. AF Plate Load
28	2.2 Meg.	½	C-9B1-33	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
29	330Ω	½	C-9B1-56	BW-½-330	Or.-Or.-Br. Bias
30	330Ω	½	C-9B1-56	BW-½-330	Or.-Or.-Br. "
31	10KΩ	½	C-9B1-74	BTS-10K	Br.-Blk.-Or. Output Screen Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
32	6000Ω	3.2Ω	480Ω	.5Ω	B-12C-10528	A-3878	T22S46		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-107		
33	PM	3.2Ω	B-18A-11453	Mod. P5-V		
	CONE DIA.	VC DIA.				
34	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

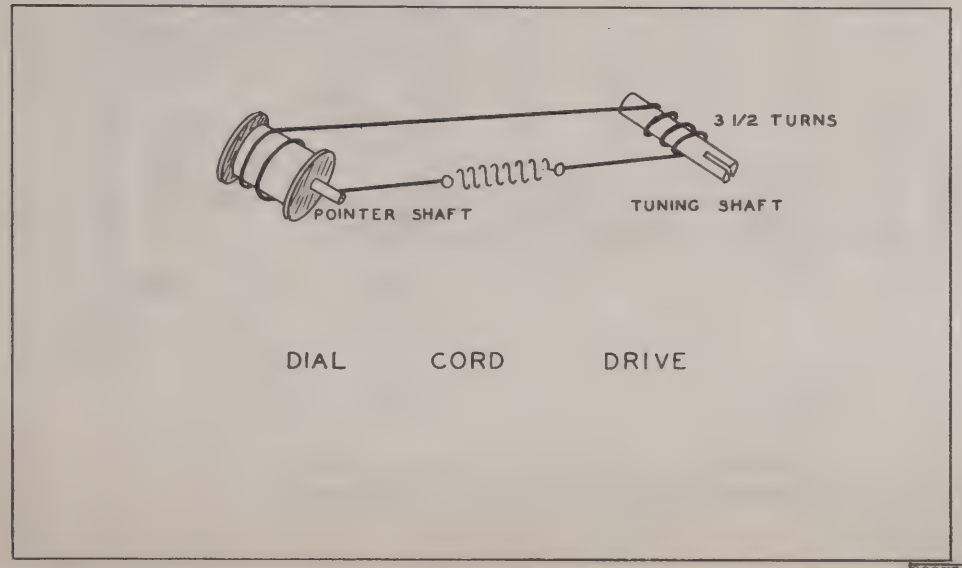
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
35	Ant. Coil		9.5Ω	C-211-10403		Items 35 & 36 are slug tuned and ganged together and are part of tuning assy.
36	Osc. Coil	1.5Ω	6.5Ω			
37	Input IF	25Ω	25Ω	B-13A-10333	16-6658	
38	Output IF	28Ω	28Ω	B-13B-10334	16-6660	Add 100 MMFD from low end of secondary to ground.

BATTERIES

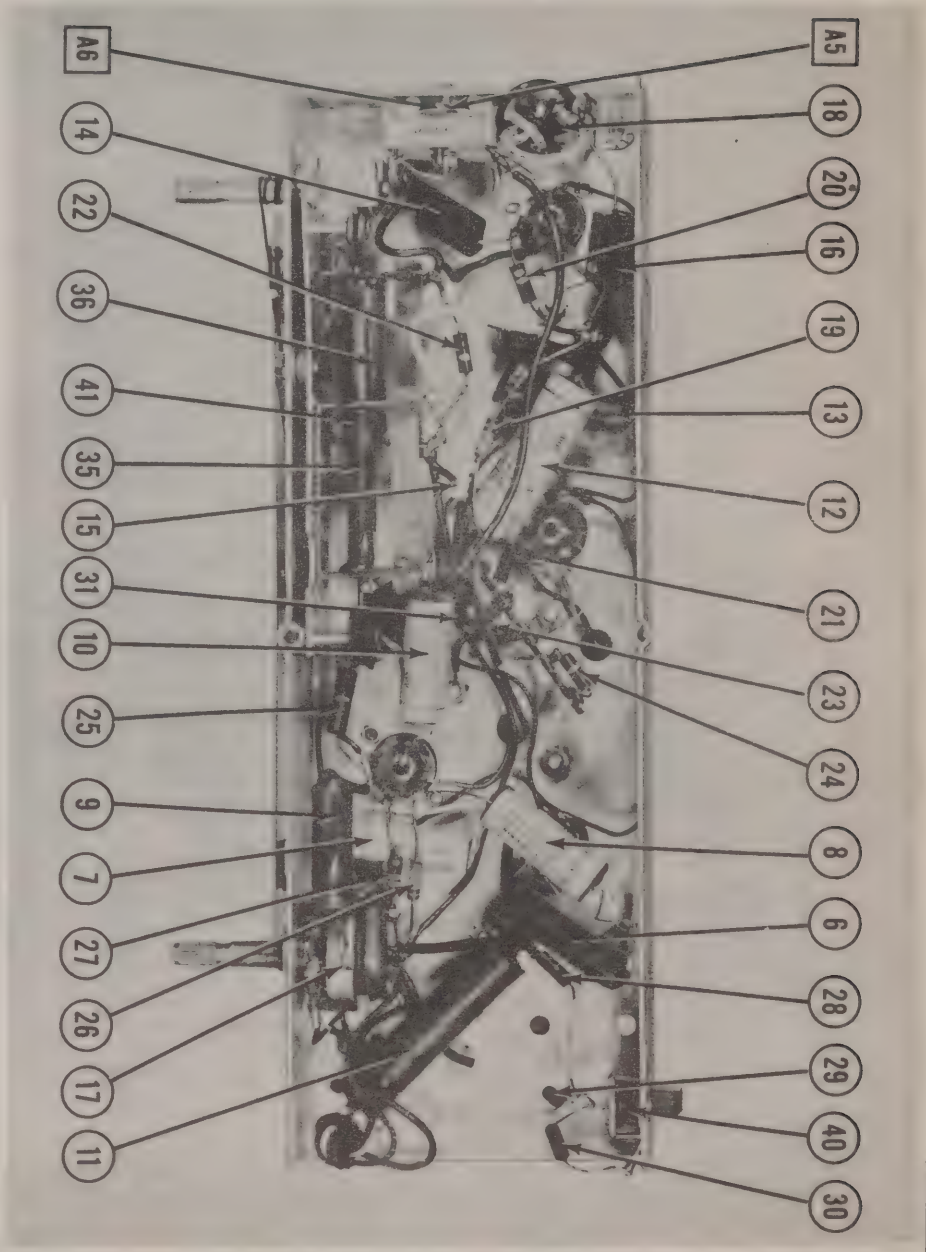
ITEM No.	VOLTAGE	TRUETONE PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
39	1½ V. "A" 90V. "B"	Wizard B-6411 or B-6430			#758	

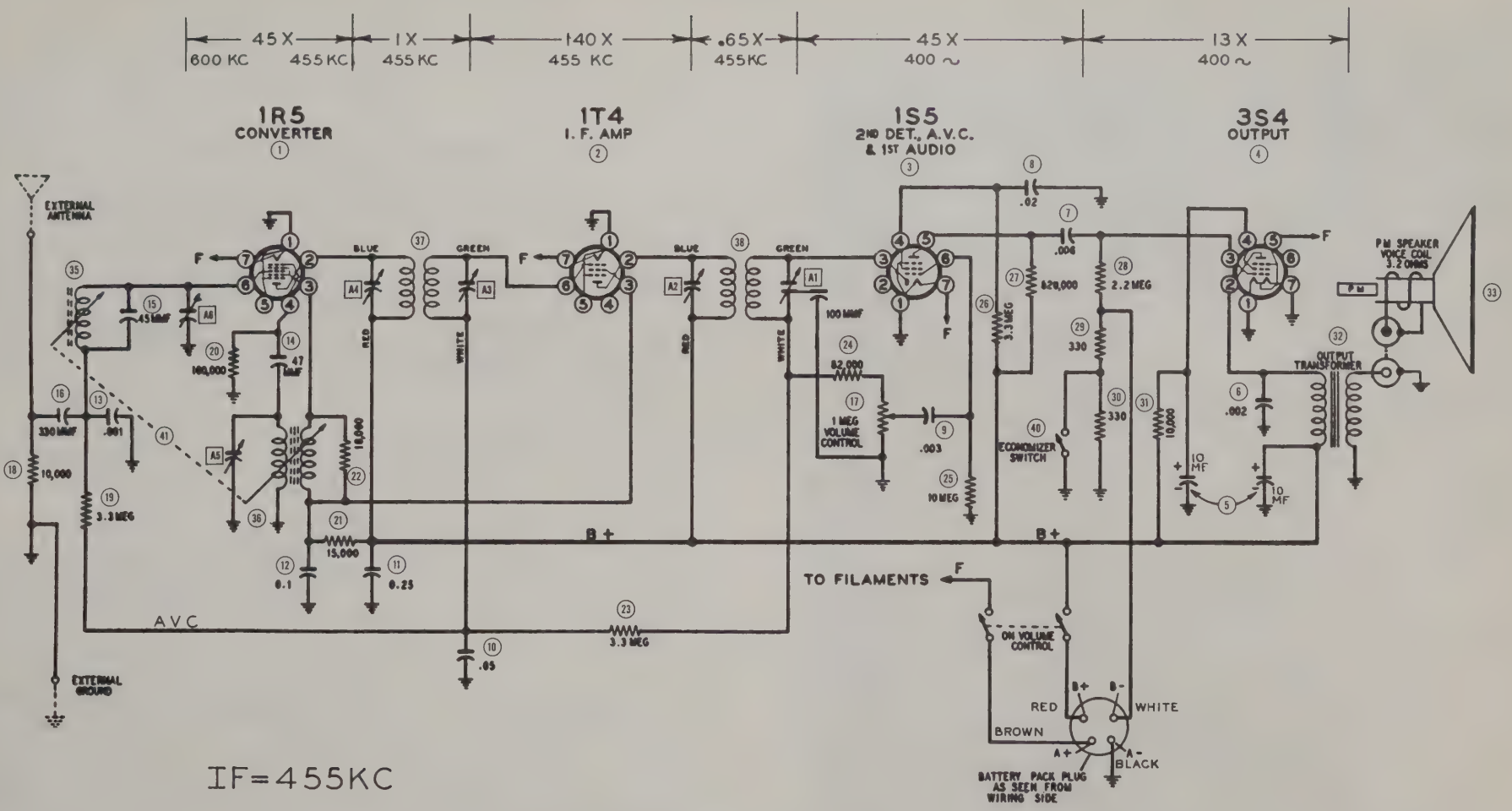
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
40	Switch	A-20C-10317	
41	Tuner Unit	C-211-10403	
A5 A6	Dual Trimmer	A-8H-10320	{Osc. Adj. Ant. Adj.} 84-156 MMF (each)
	Dial Scale	B-6D-11457	
	Dial Glass	B-6D-10290	
	Dial Pointer	B-2G-10118	



CHASSIS—BOTTOM VIEW





VOLTAGE AND RESISTANCE READINGS TAKEN WITH BATTERY SWITCH IN NEW POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	83V.DC	45V.DC	-2.8V.DC	0V.	0V.	1.4V.DC
2	1T4	0V.	83V.DC	45V.DC	83V.DC	0V.	0V.	1.4V.DC
3	1S5	0V.	0V.	-.4V.DC	16V.DC	15V.DC	-.1V.DC	1.4V.DC
4	3S4	0V.	80V.DC	-1.1V.DC	68V.DC	1.4V.DC	80V.DC	0V.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0Ω	110KΩ	125KΩ	110KΩ	0Ω	7MEG.	*
2	1T4	0Ω	110KΩ	125KΩ	110KΩ	0Ω	3.2MEG.	*
3	1S5	0Ω	INF.	900KΩ	3.4MEG.	930KΩ	10MEG.	*
4	3S4	0Ω	110KΩ	2MEG.	120KΩ	*	110KΩ	0Ω

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4712-31

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to chassis during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

WOOLAROC
MODEL 3-5 A

WOOLAROC
MODEL 3-5 A

WOOLAROC MODEL 3-5A

TRADE NAME	Woolaroc, Model 3-5A
SUPPLIER	Phillips Petroleum Co., Bartlesville, Okla.
TYPE SET	AC-DC Operated Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT 1st. Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1720KC RATING .245 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to last reference mark at low freq. end of dial. Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and chassis. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1500 KC	Tune for maximum output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

WOOLAROC MODEL 3-5A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		WOOLAROC PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	WOOLAROC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	40	150		UP4215	FP3061†	DY-4020-150	EL-24	AF88D	■ Filter
B	20	150							▲ "
7	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	Line Filter
8	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
9	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
10	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	" "
11	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
12	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Audio Plate Bypass
13	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	IF Bypass Vol. Cont.
14	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor

†Do not use bypass section

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	WOOLAROC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 15A per instructions
C	Switch			M26	41	SW-A	" " " " "

RESISTORS

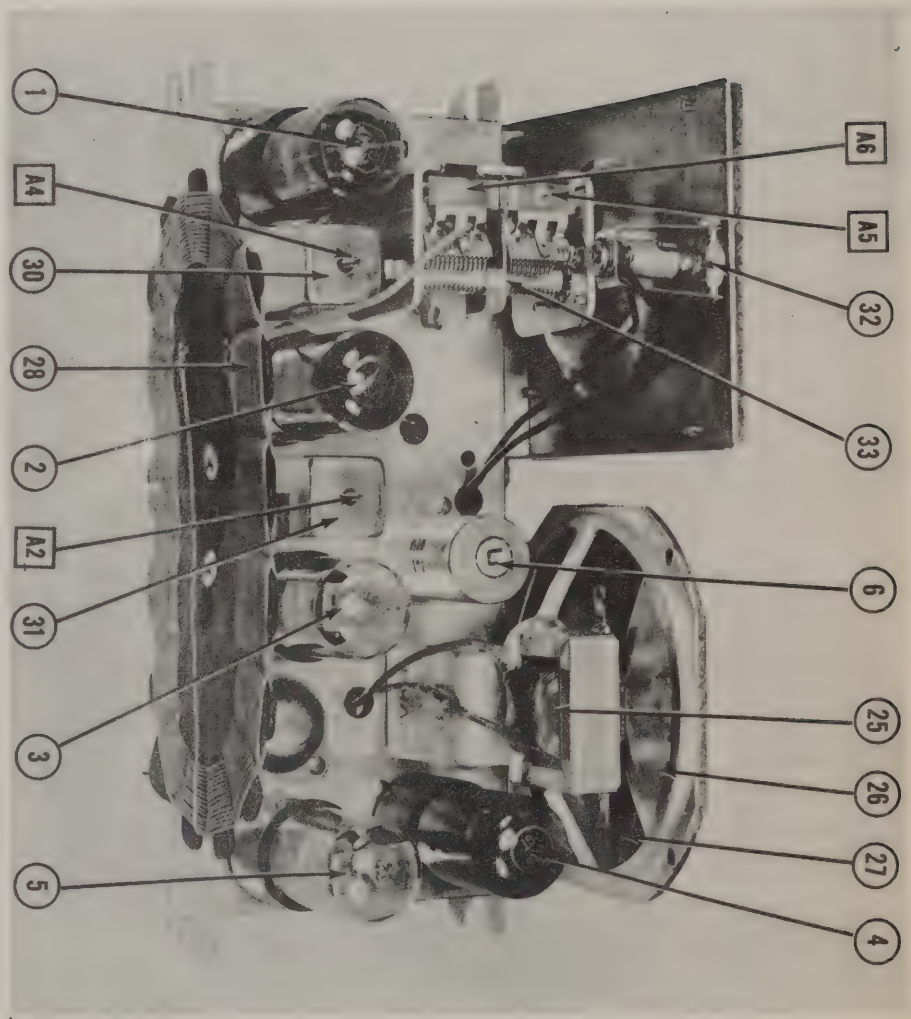
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WOOLAROC PART No.	IRC PART No.	
16	20KΩ	½		BTS-22K	Red-Blk.-Or. Oscillator Grid
17	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AVC Network
18	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network-See Note
19	6 Meg.	½		BTS-5.6 Meg.	Blue-Blk.-Grn. AF Grid
20	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. AF Plate Load
21	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
22	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
23	2000Ω	1		BTA-2200	Red-Blk.-Red Filter
24	10Ω	½		BW-½-10	Br.-Blk.-Blk. Line Dropping

Note-Some models use 2 Meg. in this application. IRC replacement BTS-2.2 Meg.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WOOLAROC PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
25	2400Ω	3.2Ω	150Ω	.5Ω		A-3876*	T22S45*		*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: WOOLAROC PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105‡		
26	PM	3.2Ω		Mod. P5-X		‡Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
27	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

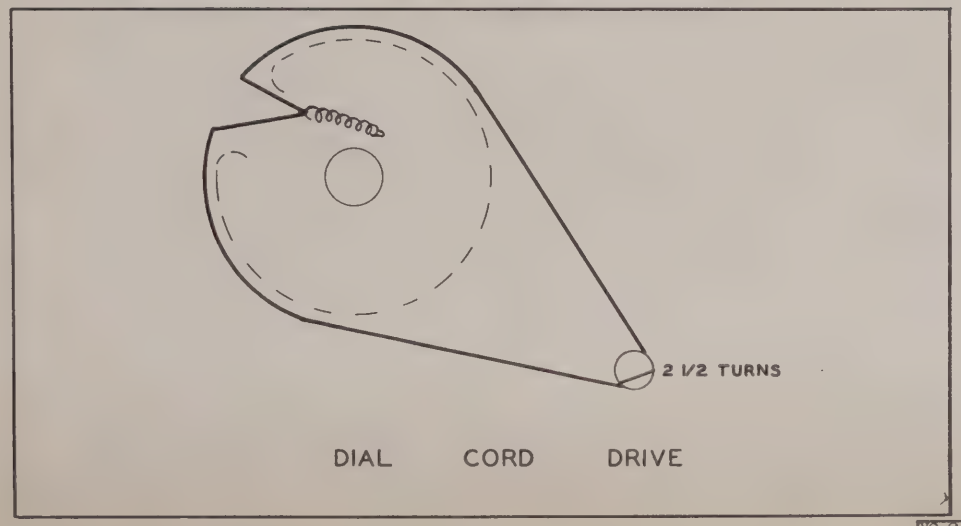
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: WOOLAROC PART No.	MEISSNER PART No.
28	Loop Ant.		1.2Ω		
29	Osc. Coil	1Ω	6Ω		14-1040
30	Input IF	10.5Ω	10Ω		16-6668
31	Output IF	10.5Ω	10.5Ω		16-6669

DIAL LIGHT

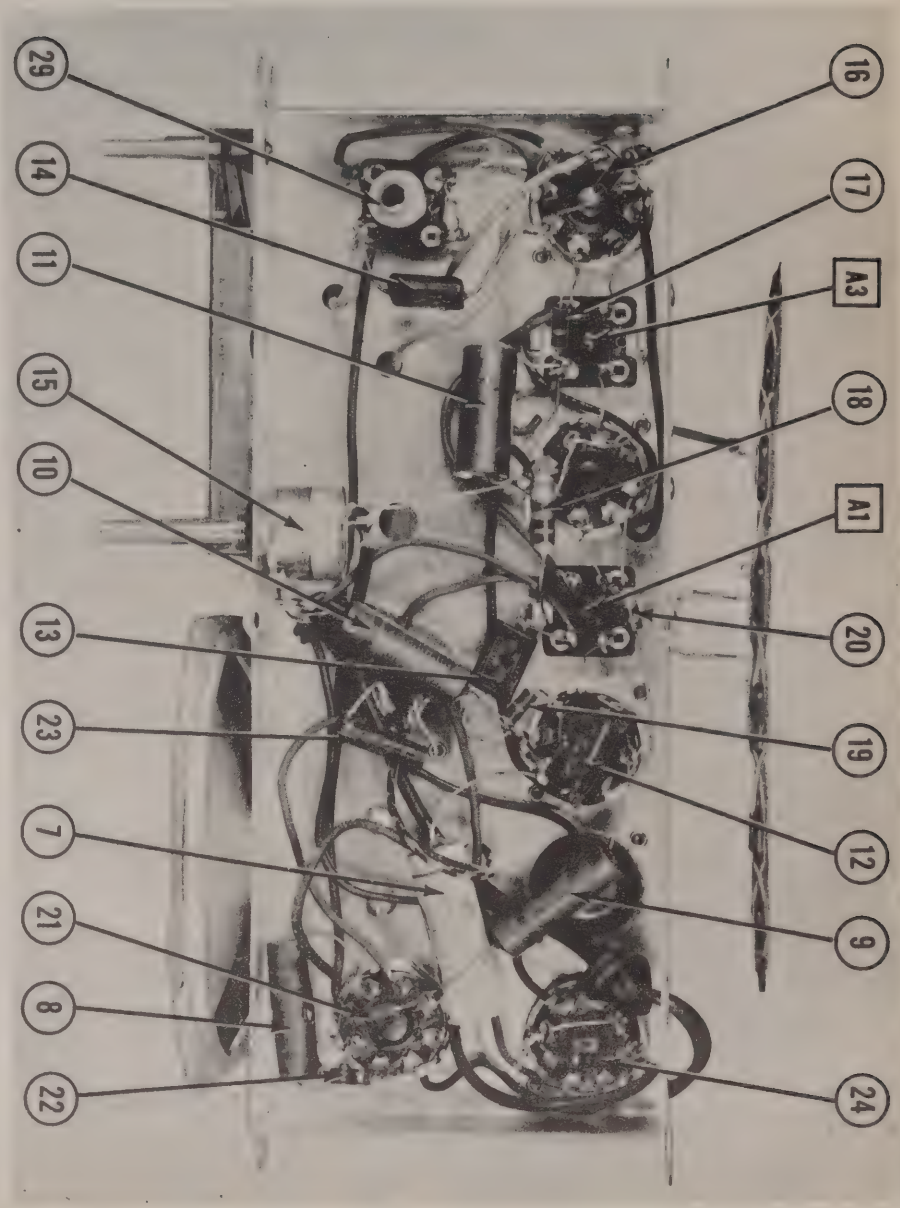
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: WOOLAROC PART No.		INSTALLATION NOTES
32	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

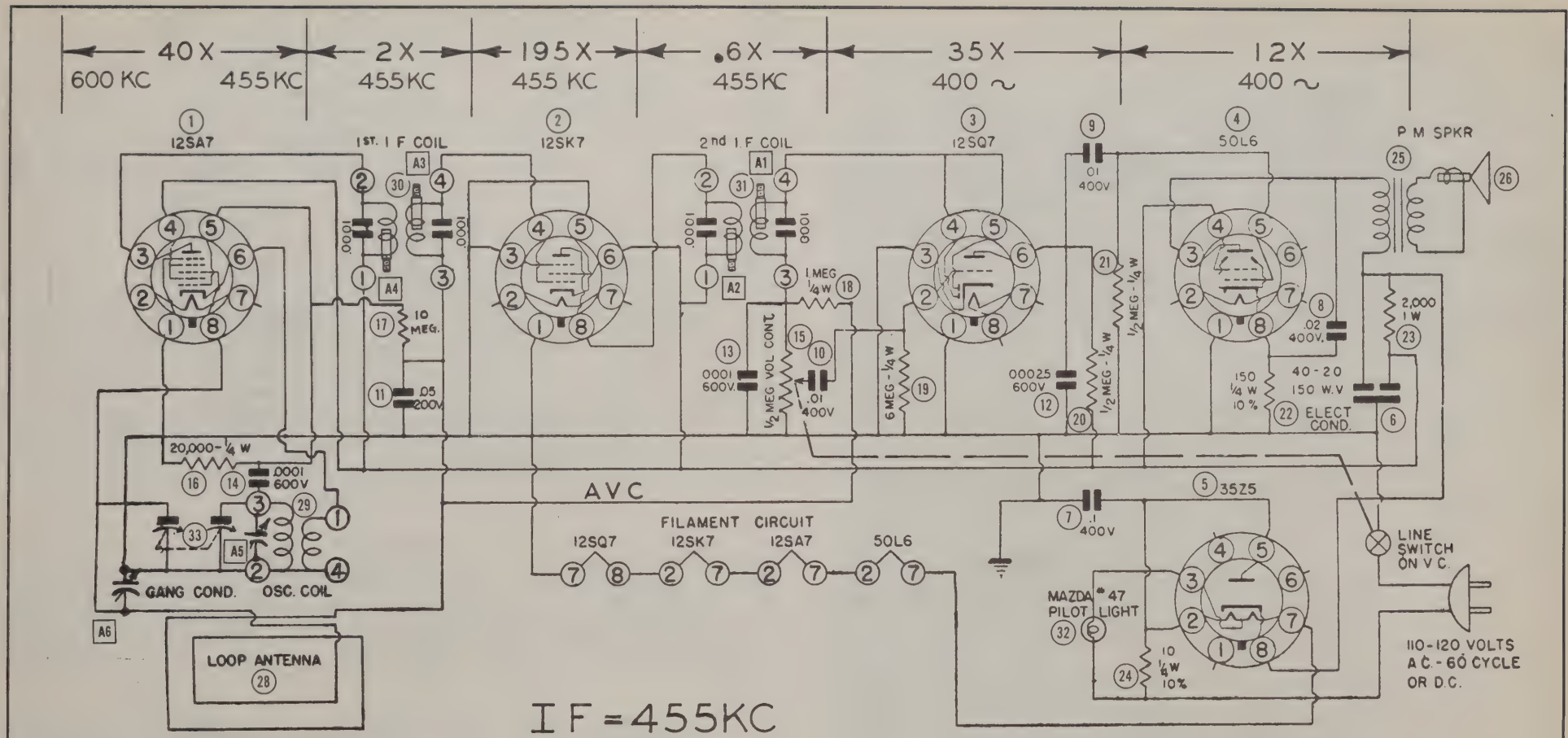
ITEM No.	PART NAME	WOOLAROC PART No.	NOTES
33	2 Gang Var. Cap		28-474 MMF, 32-195 MMF



CHASSIS—BOTTOM VIEW



WOOLAROC MODEL 3-5A



IF = 455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	25V.AC	92V.DC	92V.DC	-6.1V.DC	0V.	37V.AC	-.63V.DC
2	12SK7GT	0V.	13V.AC	0V.	-.63V.DC	0V.	92V.DC	25V.AC	92V.DC
3	12SQ7GT	0V.	-.68V.DC	0V.	-.53V.DC	-.53V.DC	38V.DC	13V.AC	0V.
4	50L6GT	0V.	37V.AC	128V.DC	92V.DC	0V.	0V.	88V.AC	5.9V.DC
5	35Z5GT	0V.	117V.AC	113V.AC	0V.	117V.AC	117V.AC	88V.AC	135V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	24Ω	95KΩ	95KΩ	18KΩ	.8Ω	36Ω	1.1MEG.
2	12SK7GT	0Ω	12Ω	0Ω	1.1MEG.	0Ω	95KΩ	24Ω	95KΩ
3	12SQ7GT	0Ω	4 MEG.	0Ω	380KΩ	380KΩ	700KΩ	12Ω	0Ω
4	50L6GT	0Ω	36Ω	95KΩ	95KΩ	500KΩ	INF.	80Ω	135Ω
5	35Z5GT	INF.	108Ω	102Ω	INF.	108Ω	108Ω	80Ω	95KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4712-32

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TOP VIEW

GENERAL INFORMATION

The General Industries Models RC130 and RC130L are combination record changers and recorders designed to play up to twelve 10-inch or ten 12-inch records at a single loading. The last record will be repeated until the changer is turned off. A manual position is provided for playing home recordings. A cutting arm is built in for making home recordings.

Needle pressure of the playback needle should be 2½ oz. for the Model RC130, while the pressure for the model RC130L should not be less than 1¼ oz. The length of the playback needle should be ⅝".

Playback cartridge is Astatic L-70 or L-40, or equivalent. Cutter crystal is Astatic X-26 or equivalent.

MANUFACTURED BY THE GENERAL INDUSTRIES COMPANY, ELYRIA, OHIO

THIS CHANGER, WITH SLIGHT MODIFICATIONS, HAS BEEN USED IN POSTWAR PRODUCTION BY THE FOLLOWING MANUFACTURERS:

Packard-Bell Company . . . . . 3443 Wilshire Boulevard, Los Angeles, California
Wilcox-Gay Corporation . . . . . 604 Seminary Street, Charlotte, Michigan

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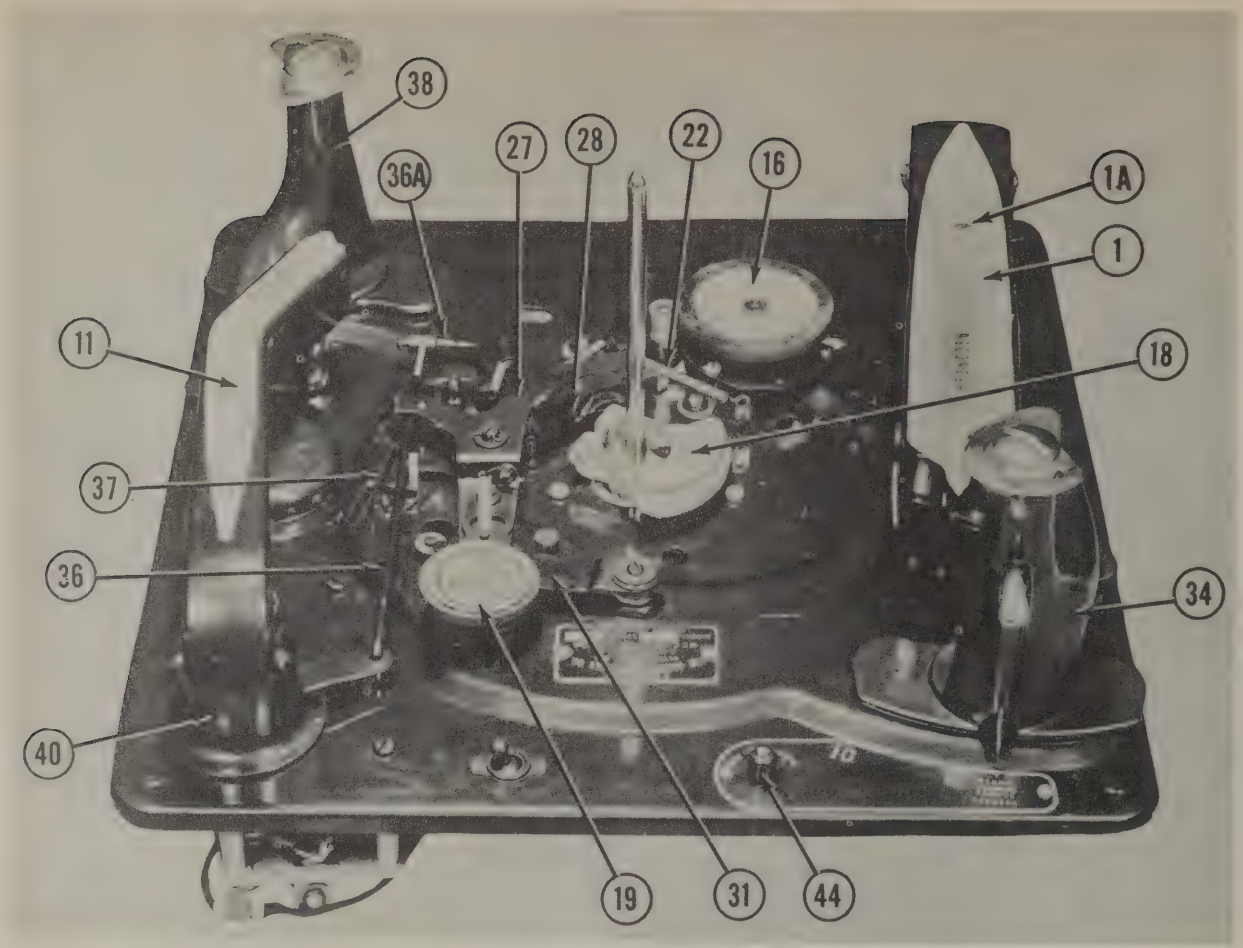
GENERAL INDUSTRIES
MODELS RC130, RC130L

GENERAL INDUSTRIES
MODELS RC130, RC130L



TOP VIEW LESS TURNTABLE

THE CHANGE CYCLE

The change cycle may be started by any of three actions:

1. Pushing the reject button causes the latch (33) to move away from the cam lift lever assembly (28) allowing this assembly to engage the cam.

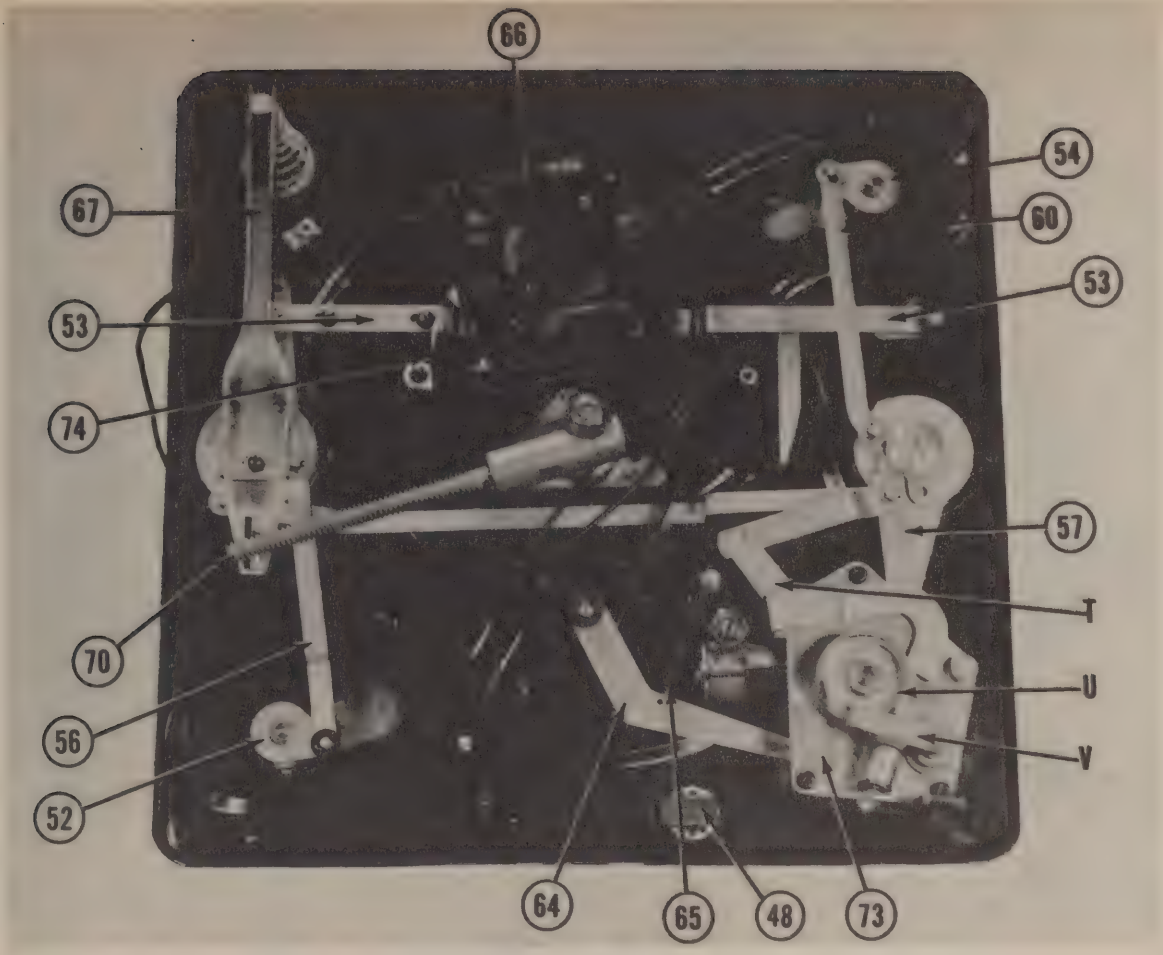
2. As the pickup nears the center of the record, the serrations on the end of the trip rod (36) engage the latch and trip lever assembly (33) Any movement of the pickup arm away from the center of the record, as by the eccentric stopping groove, will release the latch.

3. As the pickup moves within a pre-set distance from the center of the record, the trip dog (36A) will press against the latch, releasing the cam lift lever assembly.

When the cam lift lever assembly (28) is released, it moves in under the path of the trip cam (18). This causes the cam to lift and engage the pulley control lever assembly (27). The pulley control lever pivots, pushing the change mechanism drive pulley (19) against the rim of the turntable. The lever is latched in this position by the latch lever (31).

The change mechanism is driven by the pulley (19) through a double worm and gear reduction. The gear shaft (G) rotates cams (U) and (R), which control the pickup arm movement, the dropping of records, and at the conclusion of the change cycle, the release of the latch (31). The rocker arm (V) riding up the inclined portion of the tone arm lift cam (U) causes the adjusting bolt (X) on the rocker arm to push the lift pin (15) upward, raising the pickup arm off the record. The pickup return finger, which is a part of shaft assembly (F), comes in contact with the pickup return cam and swings the pickup outwardly. (The pickup return cam is part of the positioning and release cam (U). It is just below the top cam.) Before the pickup reaches its maximum outward swing, the upper extension of lever (T) comes in contact with the roller on the top of the cam (R), and actuates the record shelf (24) and the record divide (20). By the time the pickup arm arrives at its maximum outward position, the record shelf and divider have turned enough to select and drop a record to the turntable.

As the mechanism starts the second half of its cycle, the lower extension of the lever (T) engages with the roller on the upper side of the cam (U) rotating the record shelf (24) in the opposite direction. At the same time, the cam follower (O) comes in contact with positioning cam (R). The pickup is now rotated into position. The positioning of the pickup arm (11) for 10 or 12-inch records is controlled by two cams just above the lower cam shaft bearing of cam (R).



BOTTOM VIEW

The lower of these cams (with short throw) positions the pickup for 12-inch records, and the upper cam (with long throw) positions the pickup for 10-inch records. When the lever (35) is set in 10 or 12-inch position, the pickup positioning cam follower is shifted up or down by the positioner fork (Q) so as to engage the proper cam.

At this point, the rocker arm (V), travels down the inclined portion of the lift cam (U), permitting the tone arm to rest on the record. The record shelf is now returned to its original position. The follower lever (64), riding on the uppermost cam of (R), releases the latch lever (31), thus disengaging pulley (19) from the turntable rim.

ADJUSTMENTS

Adjustment of Pickup Lowering Point

Place the changer in 10-inch position. Rotate the turntable manually until the pickup positioning cam follower (O) is at the point of maximum rise of the pickup positioning cam (R). Now raise the pickup arm to the vertical position and loosen the two screws on the mounting bracket (12) so that the pickup arm (11) can be moved with relation to the base (40). Hold the base (40) so that it will not turn. Now place a scale under the pickup needle with the end touching the turntable shaft. Turn the pickup arm so that the distance from the needle to the shaft is 4-45/64".

Tighten the two screws, being careful not to move the tone arm. The adjustment will also take care of 12-inch records.

Pickup Lift Adjustment

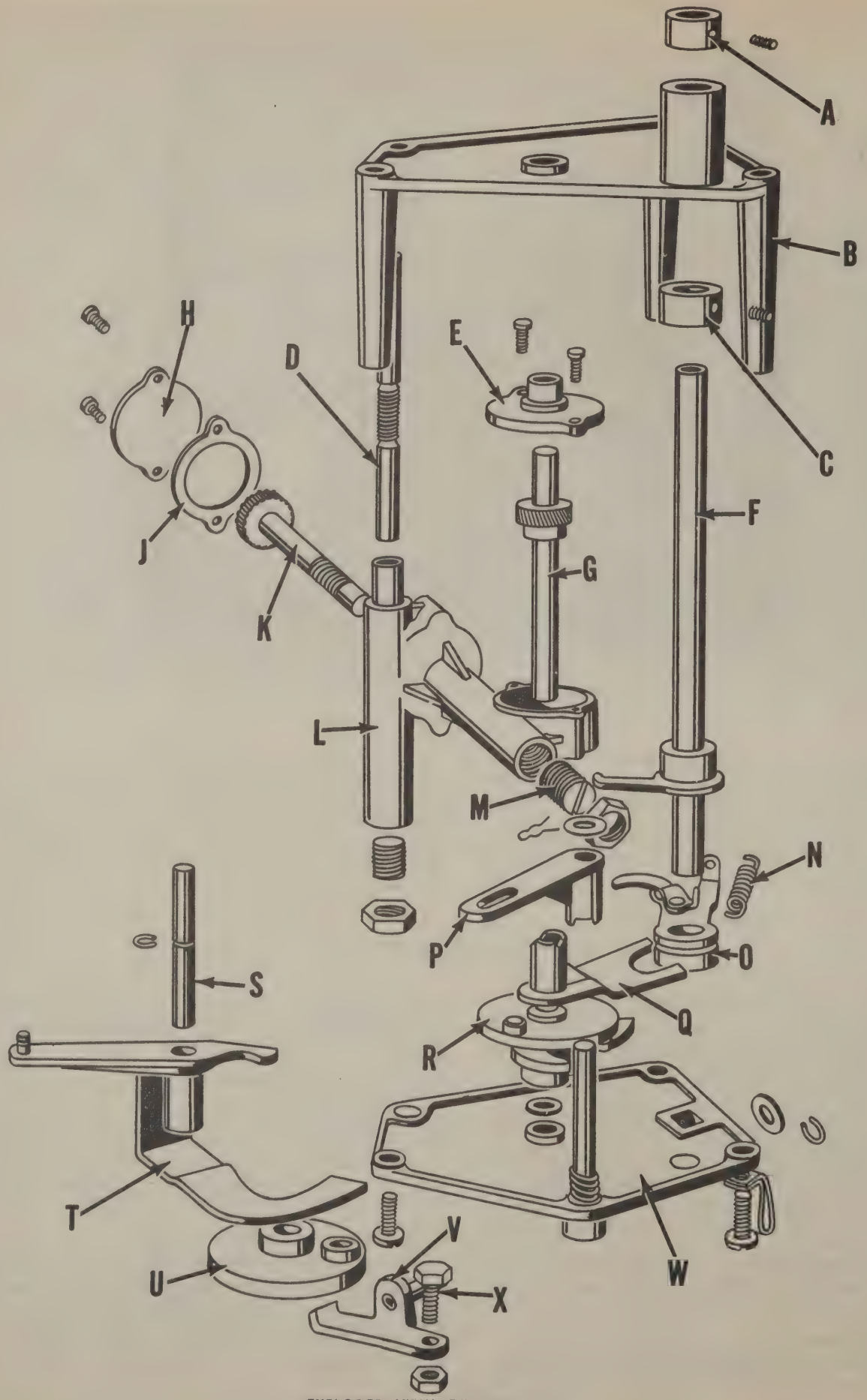
The height of the pickup arm during cycle may be adjusted by the tone arm height adjusting bolt (X). By turning the bolt clockwise, the pickup lift will be lessened; counterclockwise, the pickup will be raised.

Adjustment of Spiral Trip Mechanism

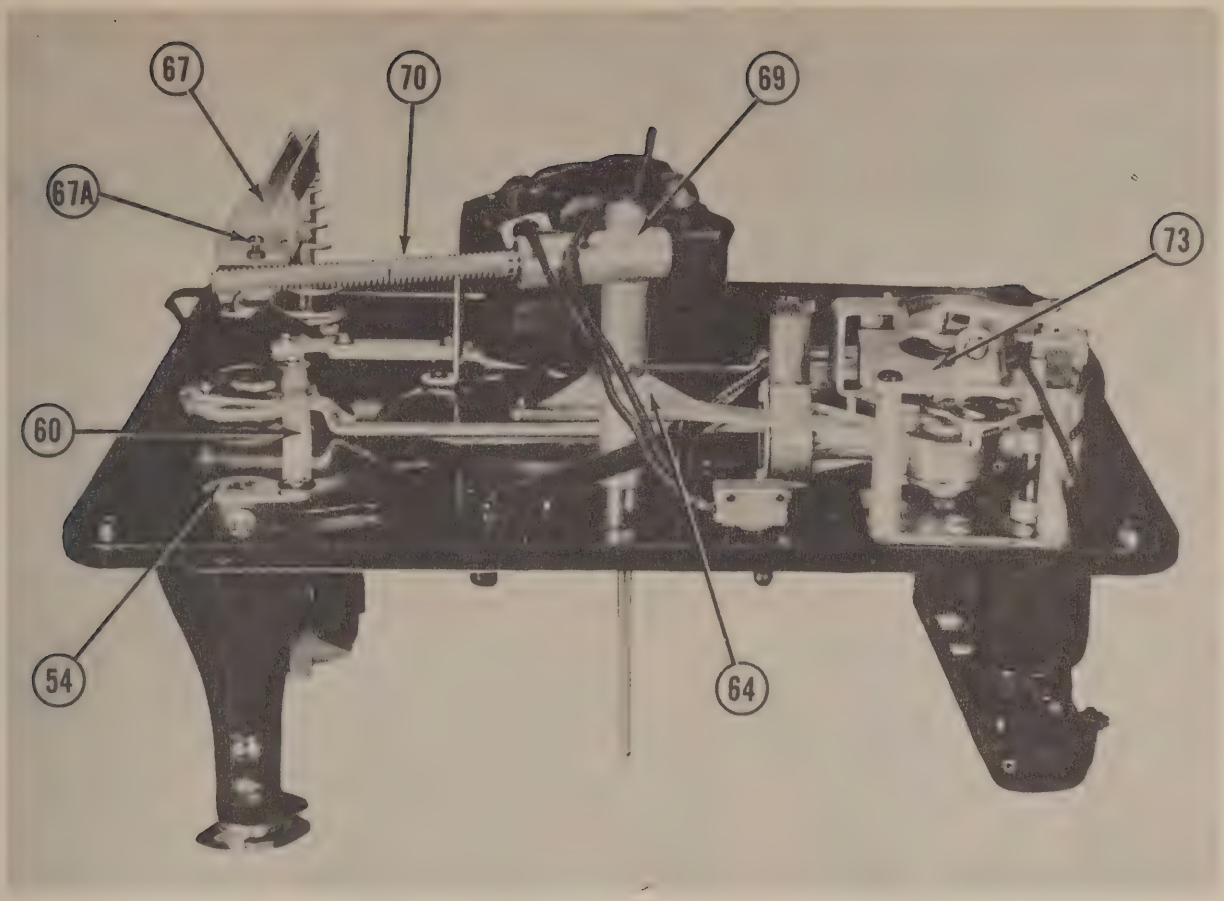
The adjustment of the spiral trip may be arrived at by loosening the set screw which holds the dog (36A). By sliding the dog toward the end of the trip rod (36), the trip will be delayed. Sliding the dog away from the end of the trip rod will advance the tripping of the mechanism.

Adjustment of Drive Pulley

The adjustment of the drive pulley is made by turning the screw of the pulley control adjusting spring. By turning the screw clockwise the pulley is drawn away from the turntable; while counterclockwise, the pressure of drive wheel against the turntable will be increased.



EXPLODED VIEW OF PART 73



FRONT VIEW

2. Pulley control lever (27) may be bent down so that it engages the trip cam (18) even when the trip cam is not raised by the lift lever (28).

3. Trip cam (18) may be sticking in raised position.

4. The latch spring (32) on the trip lever (33) may be defective or missing.

5. The stud on which the pulley control lever (27) is mounted may have worked loose and should be tightened.

The failure of the pulley (19) to disengage from the turntable may be due to the following:

1. Faulty action of the latch.

2. A defective or missing pulley control spring (22) on the pulley control lever (27).

3. The cam follower lever (64) may be bent so that it is not contacting the release cam.

Records Fail to Drop Properly:

1. The record divide support (20) may be bent. To straighten the divide support, remove the clamping screw (17), then remove the support (20) and straighten.

2. The rear record support (38) is not adjusted correctly.

The record support brackets (38) and (34) are connected and are actuated simultaneously by the adjusting tie bar (53). The front record support has fixed positions determined by detents which are located by the link pin (35). The rear record support (38), however, is adjustable. If the record supports are not the correct distance apart, loosen the two screws of the adjustable tie bar (53) and move the rear record support bracket (38) to the proper position.

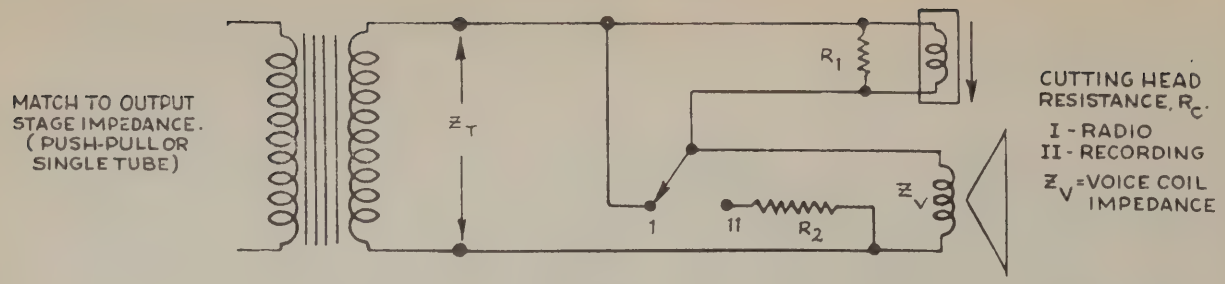


FIG. A

TYPICAL VALUES OF COMPONENTS

R_C OHMS	R_1 OHMS	Z_V OHMS	R_2 OHMS	Z_T OHMS	MONITORING ATTENUATION BELOW NORMAL PLAYING LEVEL, DB.
4	10	4	1	4	20
4	12	6	1.5	6	14
4	12	8	5.3	8	8
4	12	10	11	10	6
4	12	15	26	15	5

FIGURE A

table shaft. Normal adjustment is such that the knife edge of the follower engages the feed screw on the start of a 10″ recording blank. The stop (74) is set to prevent the stylus from cutting less than a three-inch circle. If the recorder arm is not lifted from the record after this stop is reached, the spring leaf mounting of the knife edge allows it to slip on the thread of the feed screw to prevent jamming. However, this is not recommended as a usual practice, since the feed screw will wear readily at this point.

4. Feed Screw Adjustment

An adjustment screw (71) is provided to take up end play in the feed screw. Correct adjustment allows the screw to turn freely without perceptible end play. Too tight an adjustment loads the motor excessively and causes uneven turntable speeds. Too loose an adjustment causes uneven groove spacing.

5. Stylus Angle Adjustment:

The angle between the cutting face of the stylus and the face of the recording blank is adjusted by means of the angle adjustment screw (5A). When this angle is greater than 90° (as measured on the side of the stylus toward the body of the arm), it is said to "lead." when less than 90°, it is said to "lag."

Proper adjustment is between vertical and 5° lagging. Steel styli usually operate best near the 5° limit, while the sapphire styli are generally workable over the entire range. Stellite styli are most satisfactory close to the vertical. The best adjustment is that which gives the quietest cut and plays back with the least surface noise.

6. Depth of Cut Adjustment:

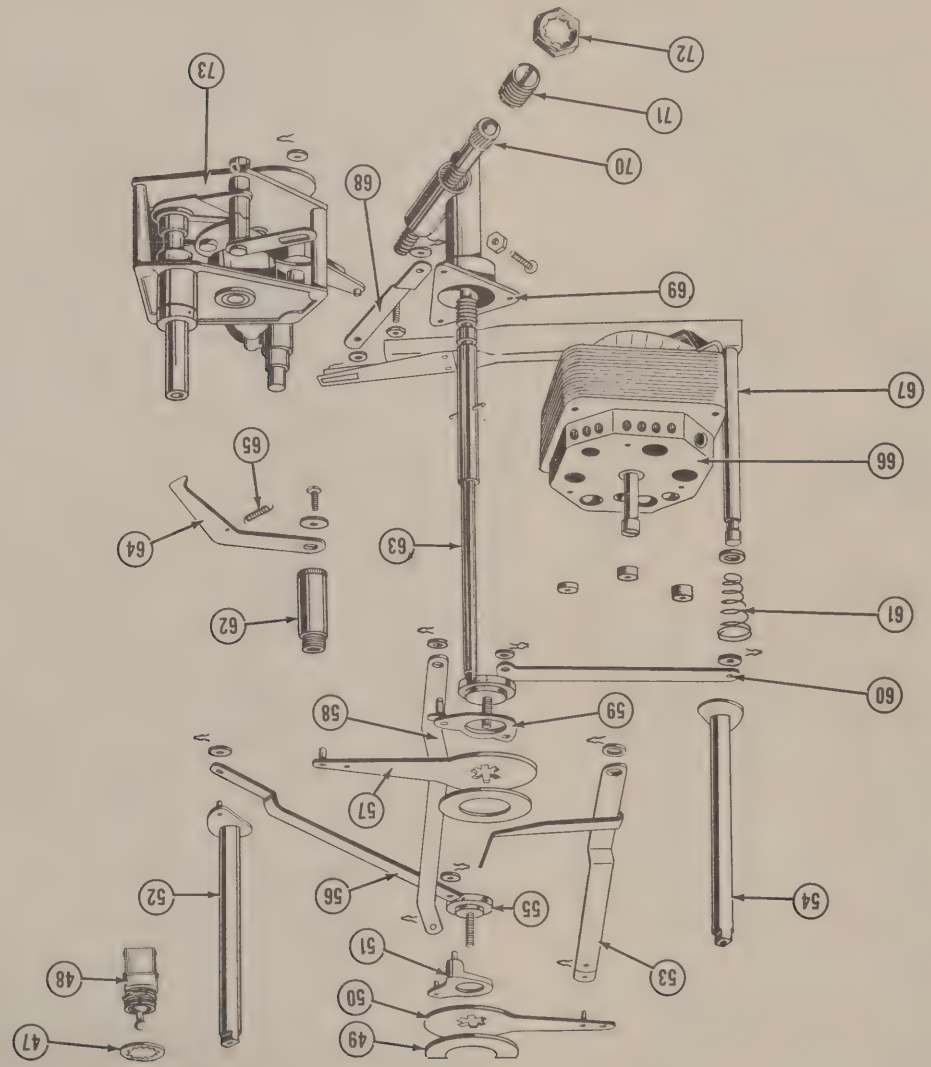
This adjustment is accomplished by the depth of cut adjustment screw (1A). Turning this screw clockwise increases the depth of cut. Proper adjustment is such that the grooves and lands (raised portions between grooves) are of the same width. Too wide a groove will cut into adjacent grooves or cause sudden variations in turntable speed, while too narrow a groove will permit the playback needle to jump grooves.

The depth of cut may vary for a given setting between recording blanks and between styli. Changing the angle of the stylus will also affect the depth of cut.

RECORDING STYLI OR NEEDLES

This device will successfully use only short shank styli or those with an overall length ranging from 9/16″ to not more than ⅝″. They must have the cutting face parallel to the axis of the shank. Hooked or bent types cannot be used, nor can those with an overall length of more than ⅝″. The stylus must have a locating flat on the shank. The proper position of the stylus is with its shank inserted as far as possible in its chuck and with the stylus set screw (2) against its flat. The thread cut from the record disc should throw to the center of the record. If it does not, the stylus is not properly positioned and the clamping screw must be loosened and the stylus reseated.

Since the stylus shank is of hardened steel, the stylus may loosen in the chuck during recording. The clamping screw should be tightened with the fingers (never with pliers) after each recording.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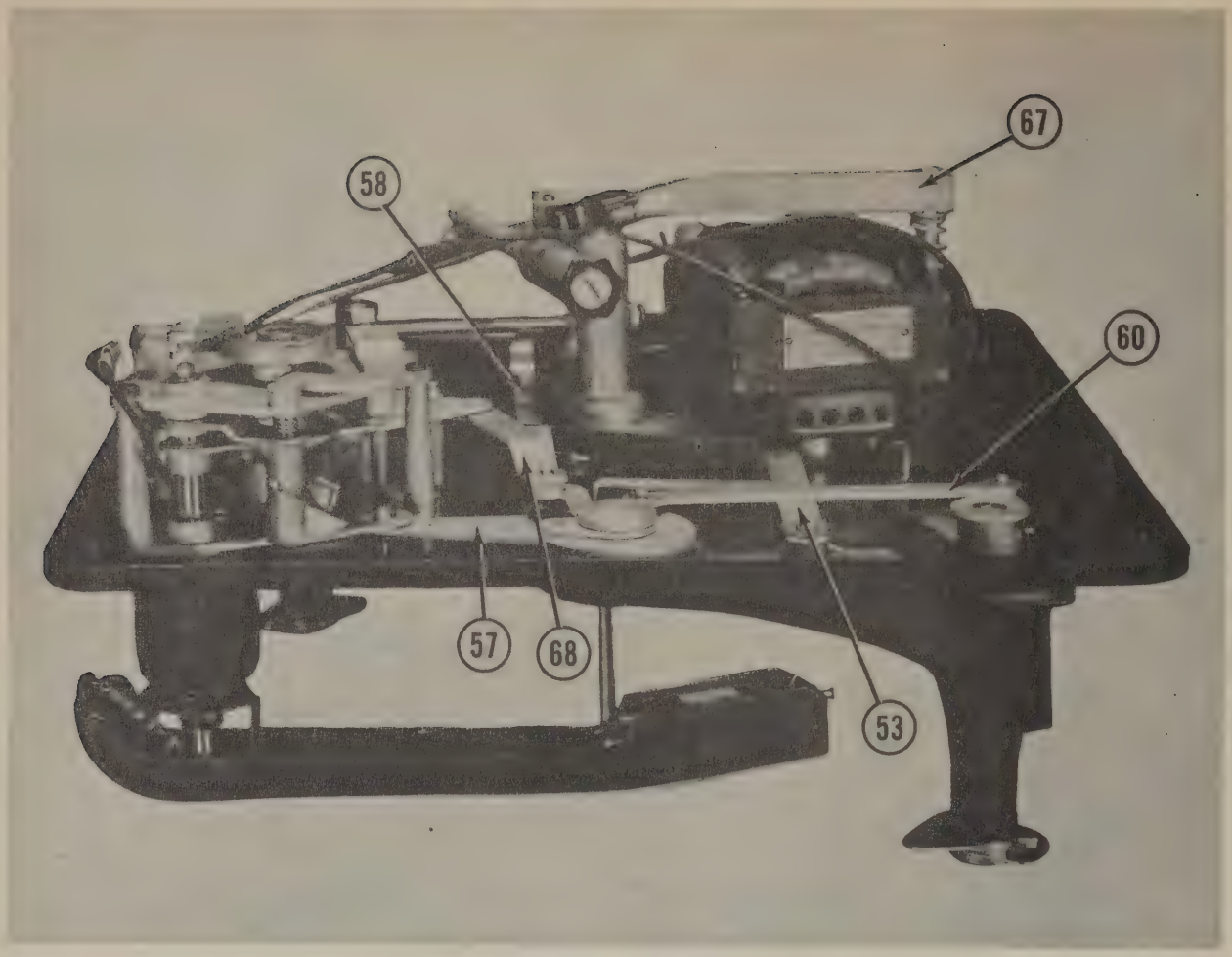


SIDE VIEW (LEFT)

TROUBLES

Mechanism Fails to Trip:

If the eccentric trip fails, make this check:

1. Check the cam lift lever spring (29); it may be stretched or missing.

2. Be sure the trip rod floats freely.

3. Examine the serrations on the trip rod (36) to be certain they have not been damaged.

4. Check the knife edge of the trip lever (33) to see if it has been damaged.

5. Hold the pickup base (40) with one hand; then press gently sideways on the pickup arm to detect lost motion. If there is an unusual amount of lost motion, reposition the pickup arm and tighten the adjusting screw (see positioning of pickup arm).

6. Sight along the trip rod (36) to make sure that it has not been bent. (If bent, disassemble to straighten.)

7. Check the pressure of the tension spring (37). It may have to be increased. Excessive spring pressure will cause the pickup needle to jump the record grooves.

Mechanism Trips During Playing Cycle:

1. Weak or missing reset spring (32) on latch (33).

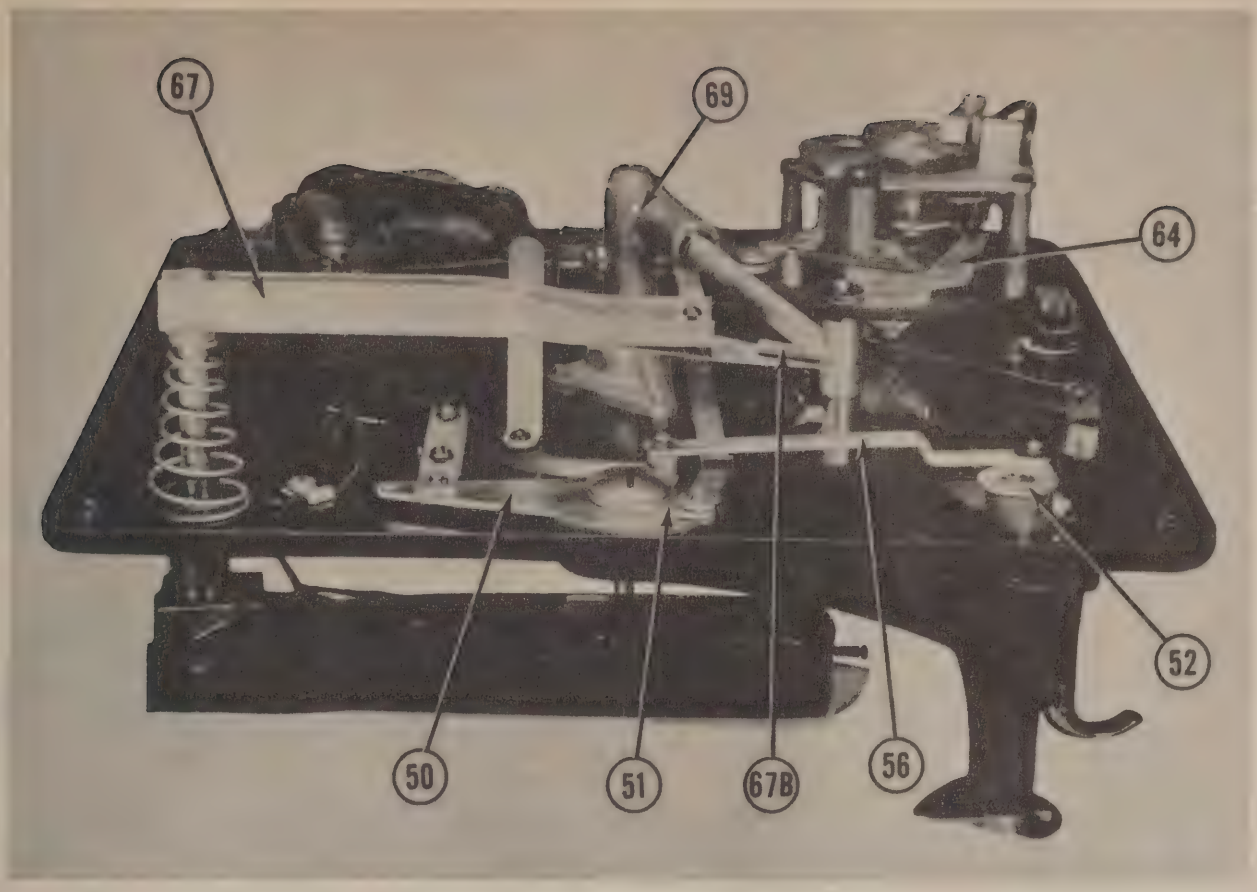
2. Defective shoulder on trip latch (33) or rounded corner on cam lift lever (3).

3. Check trip rod (36); it may be bent.

Continuous Tripping of Mechanism:

At the completion of the change cycle, if the pulley (19) disengages and immediately re-engages the trip mechanism, the trip mechanism is at fault and it is suggested that the following be checked:

1. Check the reject lever (44) and trip latch (33) for free motion.



SIDE VIEW (RIGHT)

RECORDING MECHANISM

GENERAL INFORMATION

The recorder mechanism incorporated in these models is designed to make home-type recordings at 110 lines per inch on the standard cellulose nitrate or cellulose acetate coated discs of up to 10-inch size.

To operate, the changer is set for manual operation and the pickup arm placed in its most outward position. The recording blank is placed on the turntable with the record driving pin of the turntable through the hole provided in the blank.

The recording arm is lifted from its support so that the stylus is about three inches from the surface of the record, rotated and lowered to the desired point on the blank. The knife-edge follower (67) then is automatically brought into place in contact with the feed screw (70), which is driven by the turntable at all times.

ADJUSTMENTS

1. Recording Arm Height:

The recording arm height is governed by the straddle plate (7) and the saddle plate (5). If adjustment is necessary, it is done by loosening the set screws in the saddle plate and repositioning. Correct adjustment is with 1/32″ of the follower arm post extending above the top surface of the saddle plate (not measured from staked end of bushing, but from the plate itself). It may also be necessary to readjust the follower tension screw (67A) (see below).

2. Follower Tension Adjustment:

The follower tension adjustment screw (67A) is provided for the purpose. Clockwise rotation reduces pressure of the knife-edge (67B) against the feed screw (90), while counterclockwise rotation increases the pressure. Normally, full pressure is desirable, but if this is sufficient to cause uneven turntable speed, it must be reduced. Too low pressure will result in uneven groove spacing.

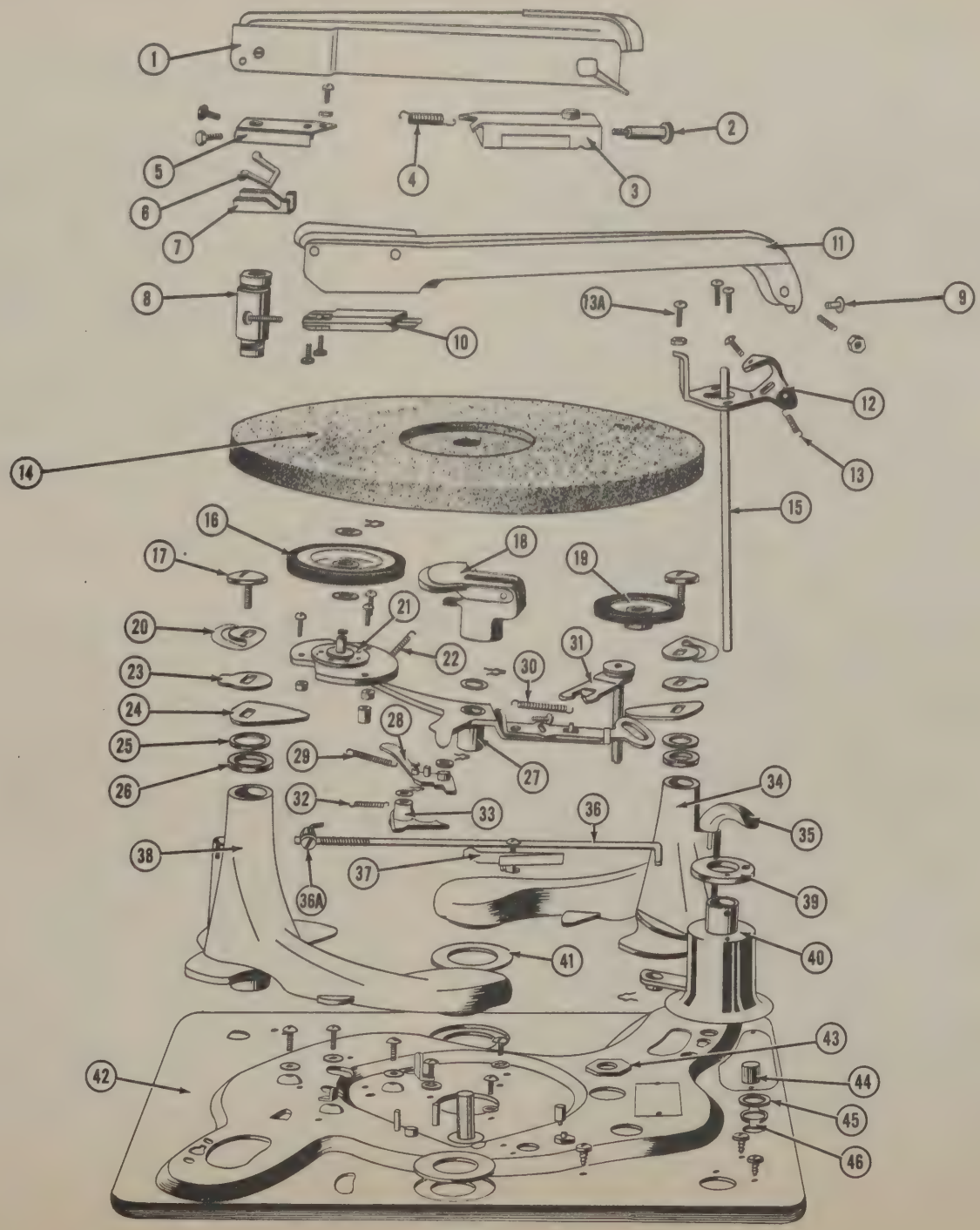
Normal adjustment is as follows. With the arm in the lowered position and the knife-edge engaged in the feed screw, the adjustment screw (67A) should just barely touch the spring blade of the knife edge at any point in the length of the feed screw.

The knife edge should usually start to engage the feed screw when the nose of the recorder arm is approximately two inches above the turntable. When raised higher than this, the arm may be freely moved in its horizontal path without interference from the feed screw.

3. "Horizontal Movement of Recorder Arm" Adjustment

The point of maximum outward travel of the recorder arm is limited by the stop on the rear of the saddle plate (5). The relation of the recorder arm to the follower arm may be changed by loosening the two hex head set screws at the rear of the saddle plate.

A stop (74) is provided to prevent the follower arm and recorder arm from swinging too far toward the turn-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CRYSTAL CUTTER

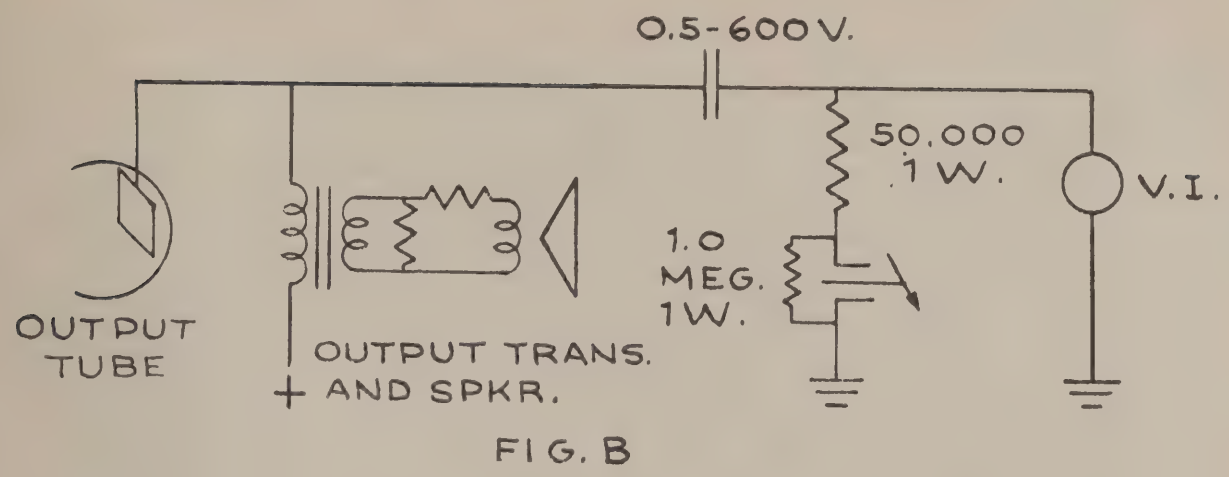

FIGURE B

The stylus should never be dropped or lowered roughly to the surface of the disc, nor should it be allowed to stand on the disc when the turntable is stationary, since the stylus will be damaged.

A cork bumper is glued to the top of the cutting head to prevent damage from striking the arm if roughly handled. If the cutting head is replaced, it is important that this bumper be glued to the new cutter. Under no circumstances should this bumper strike the arm during recording as it will drive the stylus into the disc and damage the stylus.

CONNECTION TO RADIO RECEIVER

Magnetic Cutting Head

A suggested circuit for connecting the magnetic type cutting head in the voice coil circuit of a receiver is shown in Figure A. All leads should be kept as short as possible and away from other leads.

To prevent too heavy cutting, a volume indicator should be used. When a medium-speed voltmeter is used for this purpose, the voltage peaks should be about 1 volt for speech and 1.5 volts for music. The resistance of the volume indicator must be considered as a part of R_1.

Crystal Cutting Head

A suitable connection diagram is shown in Figure B for connecting the crystal cutting head to a radio receiver. All leads should be kept as short as possible and away from other leads.

A volume indicator is necessary to prevent cutting too deeply. The "V.I.," shown in the above diagram, is a rectifier type AC voltmeter, 1000 ohms per volt, 0-150 volt scale, which is suggested as a volume indicator. For normal recording the voltage peaks should be about 100 volts. The 50,000-ohm resistor, in series with the cutter, will provide an approximation of the standard commercial record. If it is desired to emphasize high frequencies, the 50,000-ohm resistor should be shunted with a condenser of from .001 to .01 mfd. To emphasize low frequencies, the series resistor may be increased up to 250,000 ohms.

It should be remembered that temperatures in excess of 120° F., voltages in excess of 350 volts RMS, or DC voltages will damage the crystal.

LUBRICATION

Lubrication should be checked two or three times a year.

Use SAE20 motor oil twice a year on the following points:

1. Motor bearings.
2. Turntable shaft bearing under the trip cam (18).
3. Idler bearing (21).

Oil other parts of the mechanism when advisable. Keep the working parts of the cams covered with a thin film of petroleum jelly. If the follower arm post (67) shows a tendency to stick in the pivot post bushing (8) apply petroleum jelly to the post above and below the bushing and work it in by alternately raising and lowering the recording arm. Do not use oil on this bearing.

Also work petroleum jelly into the bearing surface between the straddle plate (7) and the pivot post bushing. Threads from the recording discs will work their way into the mechanism. These should be removed occasionally. Clean the feed screw with a brush. Do not use a sharp tool to remove threads from the feed screw since this screw must be kept smooth.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	13923	Cutter Arm only
1A		Depth of cut adjustment screw
2	49009	Stylus Set Screw
3	12126	Astatic X-26 Crystal cutter
4	12125	Cutter head tension spring
5	12133	Saddle plate
5A	12128	Set screw for saddle plate
	12129	Adjusting screw for saddle plate
	9228	Nut used on No. 12129 screw
6	12121	Lift lever
7	12140	Straddle plate
8	22350	Pivot post bushing
9		Needle set screw for pickup cartridge
10	13622	Astatic L-70 pickup cartridge
	13633	Astatic L-40 cartridge
	22418	Shure P-93 cartridge
	12112	Cartridge mounting screw
11	13909	Tone arm only
12	12970	Tone arm mounting bracket
13	13603	Tone arm lift spring (for L-70 and L-40 cartridge)
	13061	Tone arm lift spring (for P-93 cartridge)
13A	11616	Adjusting screw
	11573	Nut for 13A
14	12836	10″ Weighted turntable
15	11098	Tone arm lift pin
16	22076	Rubber drive wheel
17	11414	Record divide clamping screw
18	11529	Trip cam assembly complete
19	12870	Change mechanism drive pulley
20	11403	Record divide
21	12817	Drive wheel mounting plate assembly
22	11749	Drive wheel tension spring
23	11406	Record divide support
24	11402	Record shelf
25	11565	Record divide washer
26	11094	Record shelf spindle spacer
27	11677	Pulley control lever assembly
28	11475	Cam lift lever assembly
29	12964	Tension spring
30	13603	Pulley control lever spring
31	11534	Latch lever complete (post shown is separate part—part number 11532 latch lever guide)
32	12963	Tension spring
33	12974	Latch and trip lever assembly
34	12809	Front record support bracket

Ref. Letter	Part No.	DESCRIPTION
A	11535	Lift pin guide sleeve collar with No. 11610 set screw
B		Not available separately—Part of No. 11545 frame assembly
C	11535	Lift pin guide sleeve collar with No. 11191 set screw (part of No. 11127)
D	11501	Drive pulley shaft
E	11478	Gear case cover and No. 11595 screws for attaching
F	11127	Lift pin guide sleeve assembly
G	11499	Gear shaft
H	11500	Gear case end cap
J	11504	Gasket
K	11497	Horizontal shaft

Ref. No.	Part No.	DESCRIPTION
35	11419	10″ and 12″ lock pin handle assembly
36	11430	Trip rod
36A	11523	Spiral trip dog
	12143	Screw for attaching trip dog
37	12969	Trip rod tension spring
	12143	Screw for attaching 37
38	12811	Rear record support bracket
39	11014	Tone arm mounting bracket spacer
40	11093	Tone arm base assembly
41	11407	Washer
42	12806	Base plate assembly
43	11566	Nut used on latch lever post bearing
44	13396	Reject button
45		Part of 4963 switch
46		Part of 4963 switch
47	12147	Lockwasher used on switch
48	4963	Motor control switch
49	11407	Washer
50	11470	Auxiliary 10″ and 12″ shift lever assembly
51	11444	Pivot link assembly
52	11097	Record shelf spindle and link assembly
53	12815	Main 10″ and 12″ shift link
54	11097	Record shelf spindle and link assembly
55	11424	Record support bracket screw
56	11410	Rear connecting link
57	11469	Main 10″ and 12″ shift lever assembly
58	11411	Record shelf turning link
59	11687	Main pivot link assembly
60	11408	Front connecting link
61	22375	Follower arm spring
62	11548	Latch lever post bearing
63	11144	Turntable shaft with No. 9603 pin
64	11413	Cam follower lever
65	11581	Tension spring
66	22105	Motor assembly—115 volts AC 60 cycles
67	13109	Follower arm complete
67A		Follower tension adjustment screw
67B		Knife edge
68	11683	Connecting link
69	12824	Turntable shaft and lead screw housing
70	12902	Lead screw and gear assembly
71	21934	End thrust screw
72	13823	Nut for end thrust screw
73	11162	Frame assembly complete
74		Follower stop

Ref. Letter	Part No.	DESCRIPTION
L	11480	Gear and worm housing assembly
M	31049	End thrust screw
N	11623	Tension spring—part of No. 11627
O	11627	Tone arm feed-in lever complete
P	11540	Top 10″ and 12″ shift cam lever
Q	11539	Bottom 10″ and 12″ shift cam lever
R	11494	Tone arm control cam
S	11537	Support shaft
T	11682	Record shelf turning lever assembly
U	11685	Tone arm lift cam assembly
V	11433	Tone arm lift lever assembly
W		Not available separately—part of No. 11545 frame assembly
X	11611	Adjusting screw

UTAH
MODEL 650

GENERAL INFORMATION

This is a single post changer designed to operate at 105 to 125 volts, 60 cycle alternating current. It will play and automatically change twelve 10-inch or ten 12-inch records, not intermixed. The last record will be repeated until the changer is turned off.

Some production of the Model 650 includes a manual control. Models 650E, 650H, and 650K use a special crystal cartridge. Models 650F, 650G, and 650H use motors operating at supplies other than 117 volts, 60 cycles.

Manufactured by: UTAH RADIO PRODUCTS DIVISION, INTERNATIONAL DETROLA CORP., DETROIT 9, MICHIGAN

THIS CHANGER HAS BEEN USED IN POSTWAR PRODUCTION BY THE FOLLOWING MANUFACTURERS:

Alsam Products Corp.	805 Milwaukee Avenue, Chicago, Illinois
Audio Industries	Michigan City, Indiana
Belmont Radio Corp.	5921 West Dickens Avenue, Chicago, Illinois
Bendix Radio Div. of Bendix Aviation Corp.	Baltimore, Maryland
Colonial Radio Corp.	254 Rano Street, Buffalo, New York
Electronic Corp. of America	170-53rd Street, Brooklyn, New York
Electromatic Mfg. Corp.	88 University Place, New York, New York
Electro Tone Corp.	221 Hudson, Hoboken, New Jersey
Howard Radio Co.	1731 Belmont Avenue, Chicago, Illinois
International Detrola Corp.	Detroit 9, Michigan
Ohio Electronics, Inc.	1156 Dorr Street, Toledo, Ohio
Packard-Bell Co.	3443 Wilshire Boulevard, Los Angeles, California
Steelman Radio Corp.	742 East Tremont Avenue, New York, New York
Stromberg-Carlson Co.	100 Carlson Road, Rochester, New York
Symphonic Radio & Elec. Co.	292-298 Main Street, Cambridge, Massachusetts
TeleQuip Radio Corp.	1901-07 South Washtenaw Avenue, Chicago, Illinois
Warwick Mfg. Co.	4640 West Harrison Street, Chicago, Illinois
Wells-Gardner & Co.	2701 North Kildare Avenue, Chicago, Illinois
Westinghouse Elec. Corp.	306 Fourth Avenue, Sunbury, Pennsylvania
Westinghouse Elec. Corp.	Hamilton, Ontario, Canada

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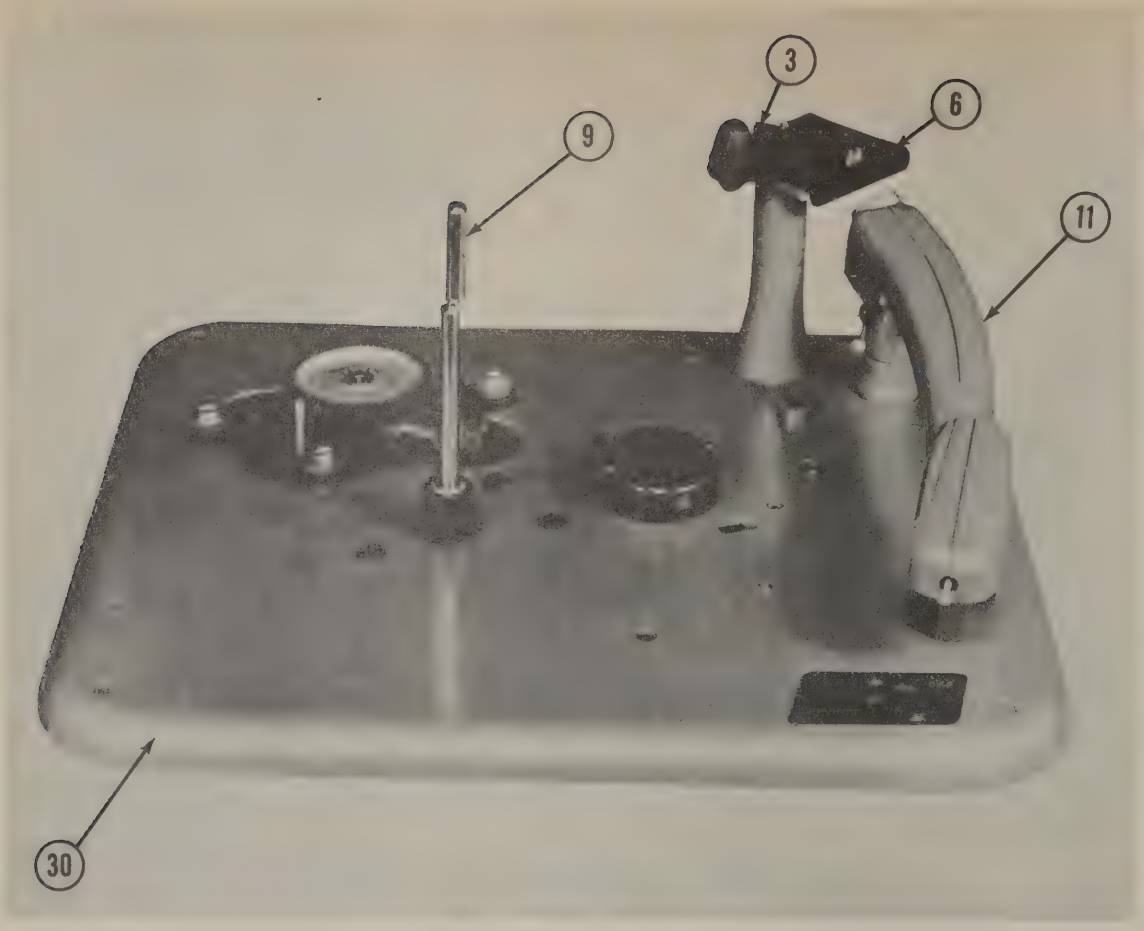
UTAH
MODEL 650



TOP VIEW LESS TURNTABLE

CHANGE CYCLE

The change cycle may be started by pulling the "on-off" lever to "reject" or by any outward movement of the pickup arm (11) as it nears the center of the record. As the pickup arm moves toward the center of the record, the lever (46), which has a serrated end, moves with the pickup arm and engages the trip dog attached to the release bracket (50). Any oscillation of the pickup arm as it rides in the eccentric groove of the record, or any outward movement of the pickup arm by hand, causes the trip lever (46) to move against the trip dog, which, in turn, actuates the release bracket (50). This allows the cam drive ratchet (60) to drop down on the drum (57) and engage one of the bosses. The cam then rotates with the drum. As the cam (56) turns, the lift rod (14) rides up an incline to the ledge of the cam and raises the pickup arm off the record. A stud on the pickup arm lever (54) is pulled into the groove of the cam (56) as it rotates, causing the pickup arm to swing out and clear the records.

The roller attached to the ejector lever and shaft (51) follows the outside edge of the cam. The cam is so shaped that as it turns the elongated portion of the cam pushes against the roller, turning the ejector shaft. The ejector cam (4), which is fastened to the other end of the shaft, thereby actuates the ejector plate (6) pushing a record off the shelf. As the cam continues to turn, the roller of the ejector lever and shaft rides around the cam to its original position, returning the ejector lever and shaft, the ejector cam, and the ejector plate to their original positions.

The stud on the pickup arm lever (54), still in the groove of the cam (56), causes the pickup to swing into position. The lift rod (14) now rides down the incline of the cam, lowering the pickup to the record. The cam drive ratchet (60) engages the release bracket assembly (50), raising the ratchet away from the boss of the drive wheel, thus completing the change cycle.

BOTTOM VIEW

ADJUSTMENTS

Needle Landing Positions

The needle should land on the record at approximately 4 13/16″ from the spindle center on 10-inch records and 5 13/16″ for 12-inch records.

Make adjustments with a 10-inch record on the turntable and the record shelf (7) in 10-inch position. Rotate the turntable manually until the needle has almost landed on the record. Loosen the hub lock screw (23A), and rotate the eccentric adjustment screw (23B) in the proper direction until the correct adjustment has been made. Be careful to retighten the hub lock screw. If the landing position of the needle is not within the range of the eccentric adjustment screw, an approximate adjustment may be made as follows: Loosen the two hub set screws (23), hold the trip lever (46) against the plate (31) near the bearing, and insert a .005″ shim between the hub assembly (22) and the boss of the plate assembly (31) upon which it rests. Position the pickup arm as nearly as possible and retighten the hub set screws. For a finer adjustment, use the eccentric adjustment screw (23B) as described above.

Pickup Arm Height

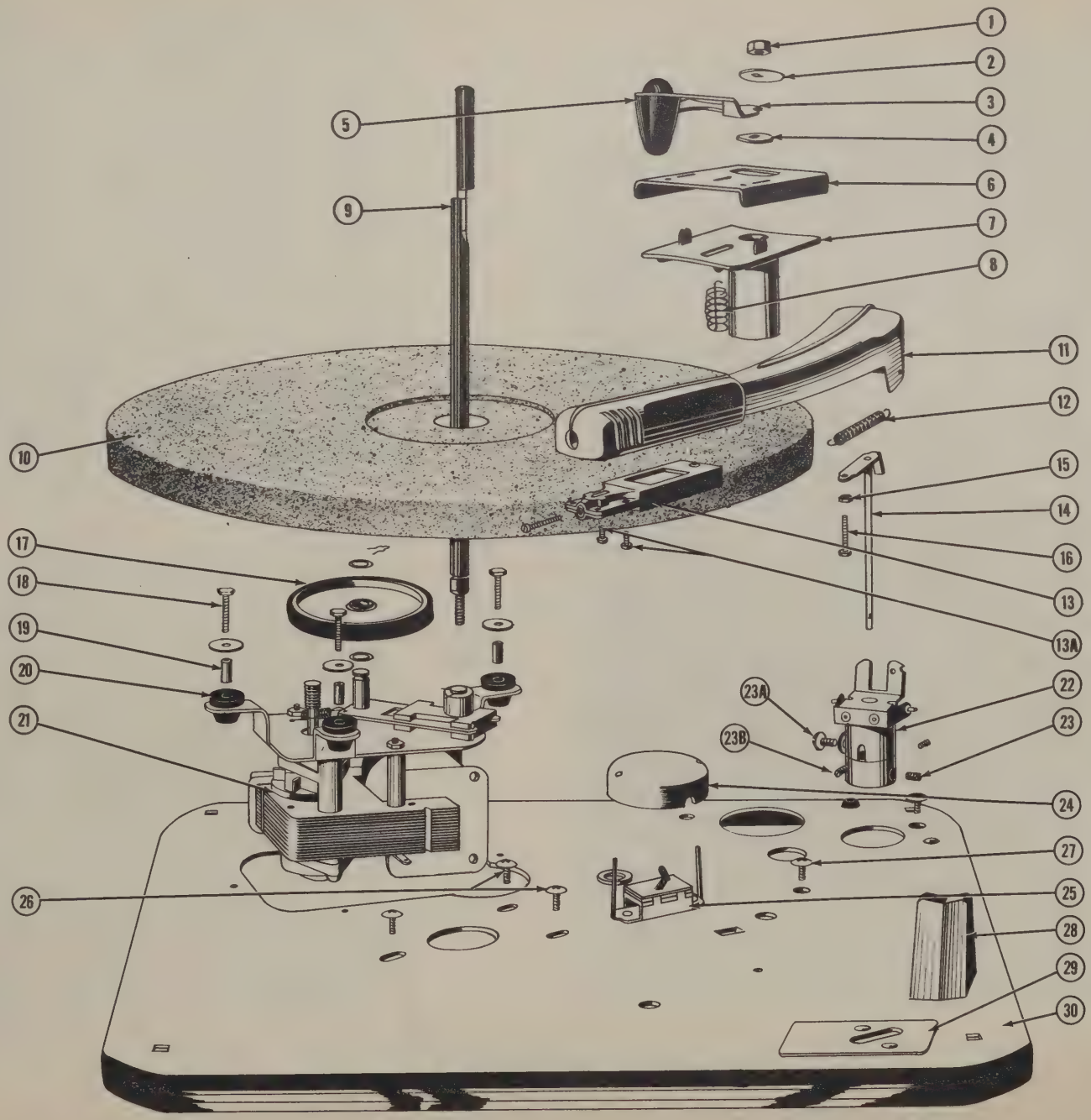
The pickup arm should clear the bottom record of the unplayed stack during the change cycle by 3/16″.

The adjustment is made by loosening the locknut (15) and turning the height adjustment screw (16) until the proper tone arm height is reached. Retighten the lock nut. Some models do not have the locknut. On these models it is only necessary to turn the screw for the proper height.

Spindle Position

The distance from the spindle to the record shelf should be such that the record will rest normally on the spindle ledge and the record shelf. It must not jam when the ejector plate pushes it, and when ejected the record should fall clear of both the shelf and the spindle ledge.

To make this adjustment, remove the turntable (10) by lifting it straight up over the spindle. Remove the drive-spring belt (61). Loosen the three Phillips head screws (26). With the record shelf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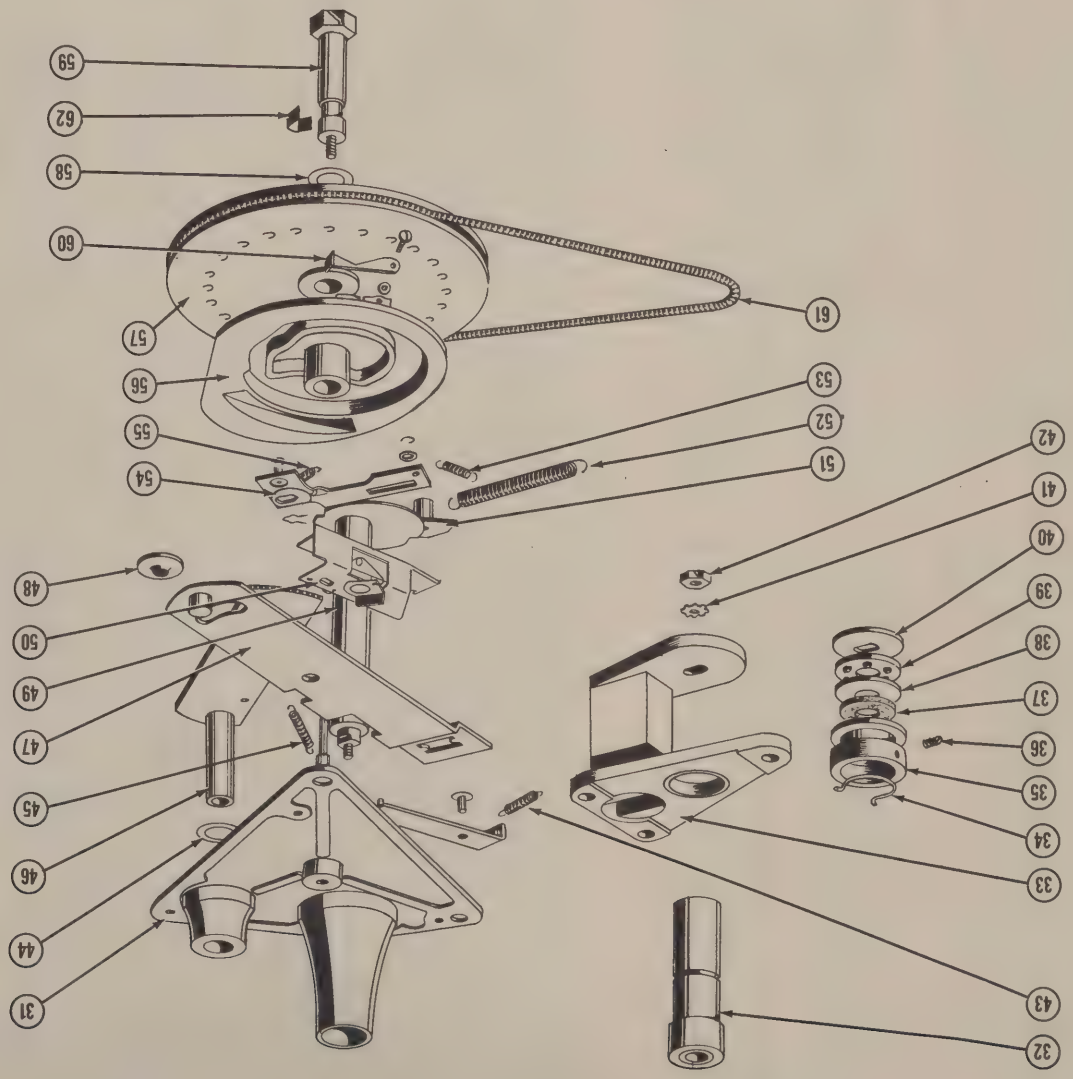
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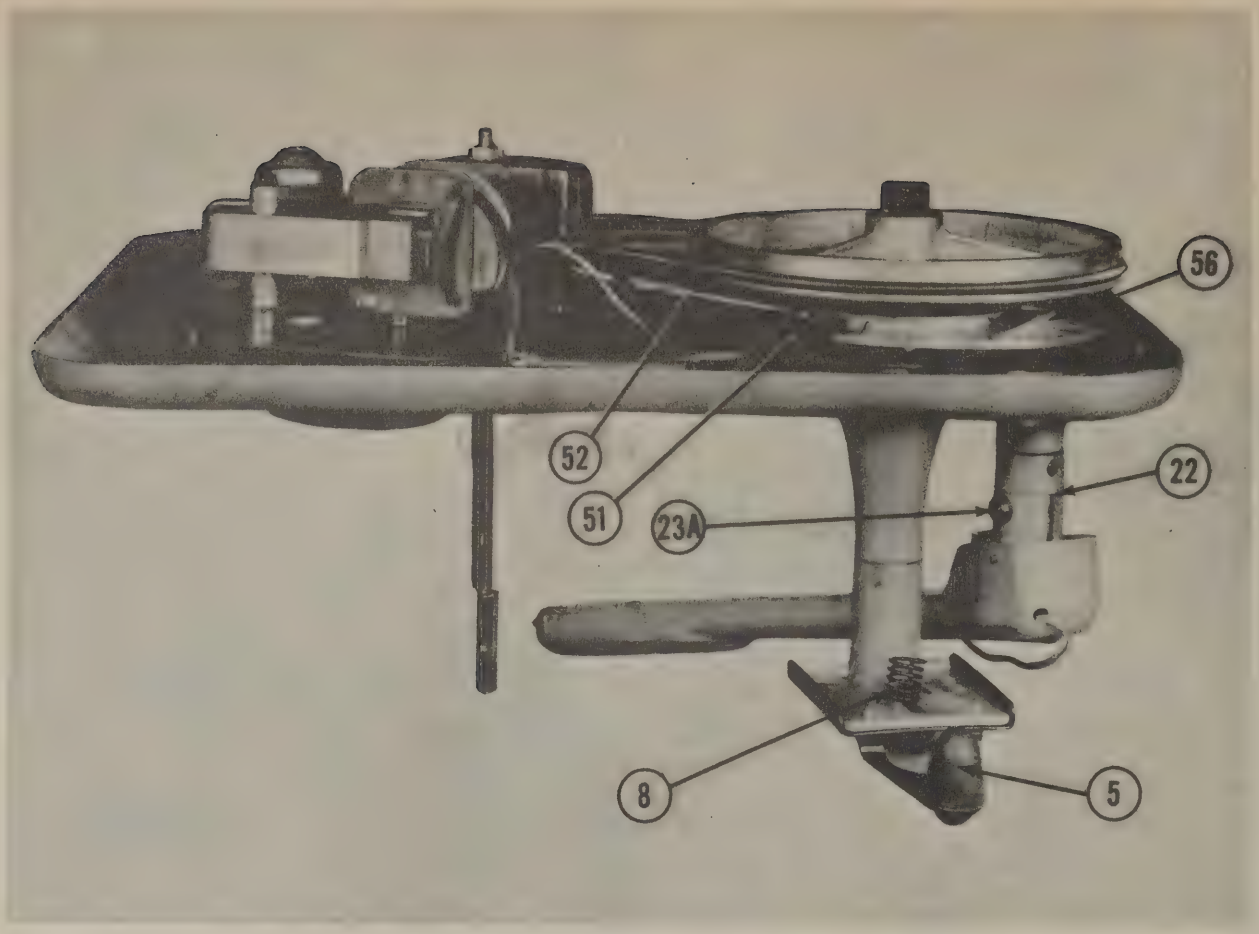


REAR VIEW

(7) in 10″ position, place a standard 10″ record over the spindle so that it rests on both the record shelf and the spindle ledge. Slide the spindle assembly (9) toward or away from the record shelf until the proper adjustment has been made. Retighten the screws (26). Replace the turntable and check this adjustment with several records.

Shelf Alignment

With the record shelf in 10-inch position, loosen the set screw under the 12-inch shelf. Place a standard 10-inch record on the record shelf and spindle ledge. Rotate the shelf slightly, in either direction, to line up the record edge and the shelf, and retighten the set screw.

Be sure the record shelf is in the proper position in relation to the cam under the motor board. When the shelf is in 10-inch position, the wider section of the cam should be toward the spindle.

Cam and Drive Wheel Assembly

Note that the stud which holds the cam and drive wheel assembly has a left-hand thread.

In assembling this unit, care must be used to avoid deforming the friction pad. Excessive friction may cause stalling during the change cycle, while insufficient tension may result in jerky action.

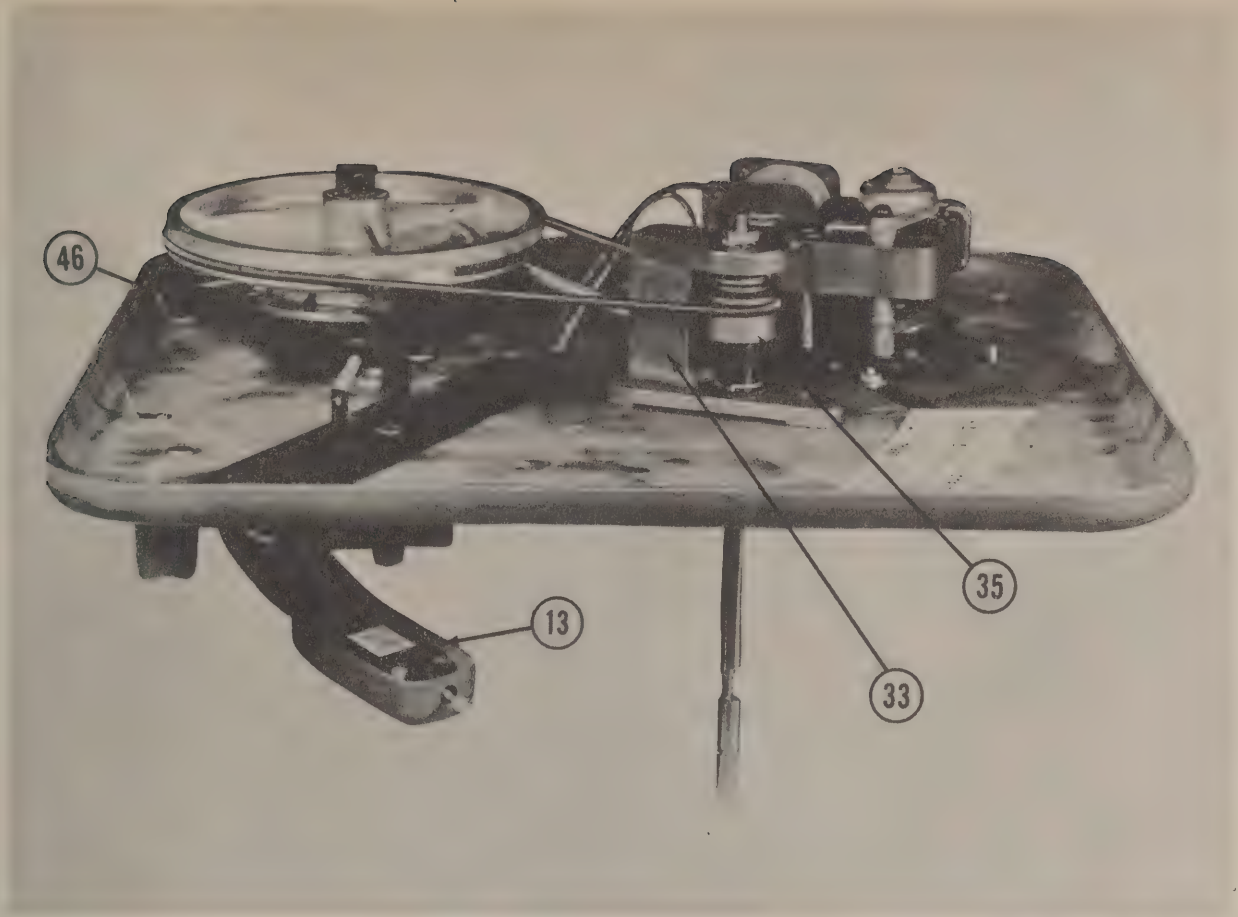
The drive ratchet on the cam should pivot freely. The leaf spring should exert a minimum of pressure on this ratchet.

Erratic set-down may be due to failure of the small spring fastened to the side of the groove in the cam.

Manual Control

Early production of the Model 650 included a "Manual-Automatic" control. This control consisted of a bracket which could be moved into place to prevent the cam drive ratchet from engaging the drive wheel. Occasional adjustment may be necessary on this bracket. If it fits too tight against the drive ratchet, the spring may not be able to pull it away when the control is moved to "Automatic." Too loose a fit may allow the ratchet to touch the bosses on the drive wheel, resulting in a clicking noise. Adjustment may be made by careful bending of the bracket.

Be sure the drive cord is seated properly on its pulley. If it becomes necessary to replace this cord, its length should be such that the end of the manual bracket clears the cam drive ratchet by about 1/8″ when the control is in "Automatic" position.



FRONT VIEW

SERVICE

1. Changer cycles continuously:

(a) Reject spring (45) loose or missing.
(b) Drive ratchet (60) binding. Also check the leaf spring which provides tension for this ratchet.

2. Changer fails to trip:

(a) Release bracket (50) may be bent or binding.
(b) Trip lever assembly may fail to engage the dog on the release bracket.
(c) Cam drive ratchet loose or bent.

3. Stalls during change cycle:

(a) Weak drive belt (61).
(b) Excessive friction caused by deformed friction pad (62)
(c) Defective motor.
(d) Oil or grease on turntable rim or idler wheel.

4. Pickup arm fails to set down properly:

(a) Counterbalance spring (12) hits the pickup arm lift assembly. Reposition the spring.
(b) Pickup lift lever bent.

5. Pickup arm sluggish or binding:

(a) Pickup lead tight. Provide slack.
(b) Trip lever assembly (46) bent.
(c) Lubrication gummy. Clean and lubricate with fine oil.
(d) Improper spacing in pickup arm hub assembly. Spacing should be at least .005".

6. Clicking:

(a) Release bracket (50) bent, rubbing bosses on drive wheel.

7. Jerky during change cycle:

(a) Drive belt damping core worn. Replace belt.
(b) Insufficient friction due to deformed friction pad (62).

8. Turntable speed slow or irregular:

(a) Frozen turntable bearing. Clean and lubricate, or replace.
(b) Oil or grease on turntable rim or idler wheel.
(c) Defective idler wheel.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	A-50066	Acorn Nut
2	A-50005	Washer, Cam Cover
3	A-50015	Toggle Plate
4	A-50002	Cam, Ejector
5	A-50025	Bumper
6	A-50162	Ejector Plate
7	C-50873	Shelf, Record Support
8	A-50040	Spring, Toggle Plate
9	B-50877	Spindle Assembly
10	D-50910	Turntable
11	D-50808	Tone Arm
12	A-50069	Counterbalance Spring
13	A-50802 or A-50812	Crystal
13A	A-50804	Screw
14	A-50500	Lift Rod Assembly
15	BN120H02	Hex Nut
16	BS908J02	Screw
17		Idler Wheel
18	A-50188	Screw-Washer Head
19	A-50038	Spacer
20	A-50186	Grommet
21	C-50859	Motor
22	B-50865	Hub Assembly
23	A-25076	Set Screw
23A		8-32 x 3/16
24	A-50097	Switch Cover
25	A-50102	Switch
26	BS014D02	Screw, Spindle Bearing Assembly
27	BS014B03	Screw, Plate
28	A-50847	Tone Arm Rest
29	A-50153	Escutcheon, "On-Off"
30	D-50852	Motor Board

Ref. No.	Part No.	DESCRIPTION
31	B-50190	Plate Assembly
32	A-50891	Turntable Bearing Assembly
33	A-50888	Strut
34	A-50046	Clip
35	A-50198	Pulley Bearing
36	A-25076	Set Screw
37	A-50088	Washer, Felt
38	A-50053	Washer
39	A-50019	Ball Bearing
40	A-50876	Washer, Thrust
41	BK122H02	Washer
42	BN110T02	Nut, Hex
43	A-50032	Index Spring
44	A-25121	Washer
45	A-50076	Reject Spring
46	A-50320	Trip Lever Assembly
47	B-50140	On-Off Lever
48	A-50104	Cup Washer
49	A-50150	Adjustment Shaft Assembly
50	B-50400	Release Bracket Assembly
51	A-50200	Ejector Shaft Assembly
52	A-50055	Ejector Spring
53	A-50076	Spring, Lead-in
54	A-50310	Tone Arm Adjustment Lever Assembly
55	A-50867	Spring, Trip Assembly
56	D-50061	Cam
57	B-50700	Drum Drive Wheel
58	A-25121	Washer
59	A-50059	Stud
60	A-50062	Ratchet, Cam Drive
61	B-50137	Belt, Drive
62	A-50058	Friction Pad

THE FOLLOWING PARTS ARE USED ONLY ON MODELS HAVING THE MANUAL CONTROL

B-50844	Manual Bracket	A-51787	Spring (for Cord)
A-50842	Escutcheon	A-50846	Manual Bracket Spring
A-9027	Idler Pulley	A-50858	Shoulder Stud
A-50843	Manual Slide Retainer	B-55400-13	Cord Assembly
A-50840	"Auto-Manual" Slide	A-51163	Index Spring

PHOTOFACT* Folder

*TRADE MARK

EMERSON MODELS
571, 606 (CH. 120066)

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The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

EMERSON MODELS
571, 606 (CH. 120066)

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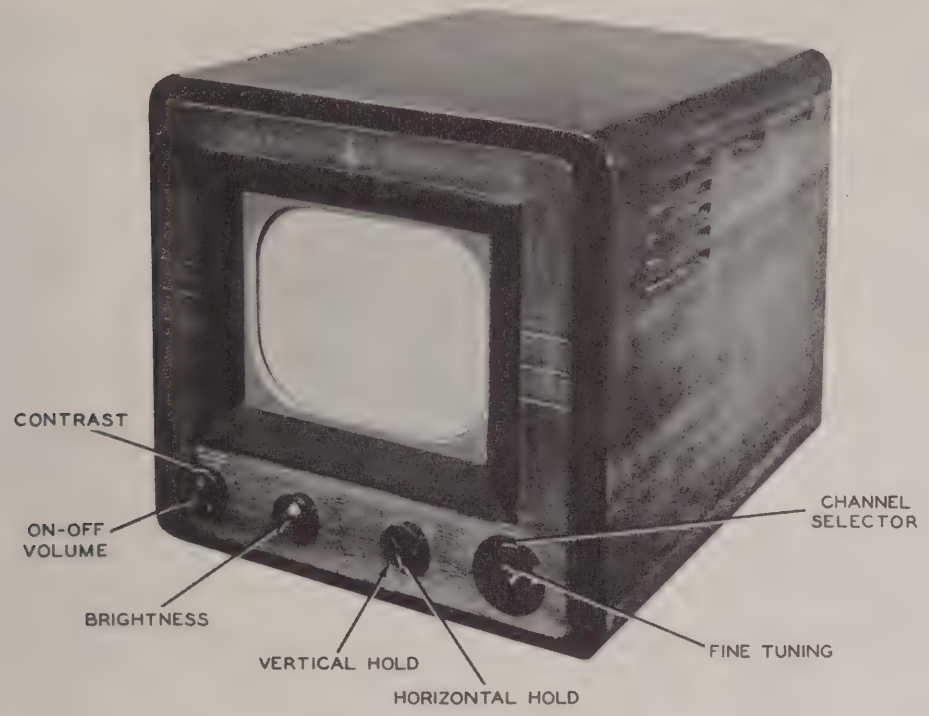

EMERSON MODEL 571

TRADE NAME	Emerson, Models 571, 606 (Ch. 120066)
MANUFACTURER	Emerson Radio & Phonograph Corp., 111 Eighth Ave., New York 11, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty-Eight
POWER SUPPLY	105-125 Volts AC RATING 2.14 Amps. @ 117 Volts AC
TUNING RANGE	Channels 1 through 13

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INSTRUCTIONS FOR THE USE OF THIS FOLDER

There are definite reasons why the material in this folder is laid out in the following manner. First, employing a combination of a six-page section and two eight-page sections enables the user to have greater facility in the use of the various material included, than is possible by permanently binding the data. Since any individual sections may be removed, it is possible to coordinate any specific servicing activity with the exact information that is required to perform that activity.

The six-page section includes the complete schematic diagram of the receiver, with no material required for actual service operations appearing on the reverse side, so that the schematic diagram may be completely removed for layout on the bench, to rest on an easel, or even to tack on the wall.

The first eight-page section (pages 3 through 10) contains all the material necessary for alignment operations on the receiver, including the individual alignment steps and the photographs or line drawings necessary to identify the location of the alignment points. This section also contains the greater portion of the parts list and description. Here again, for greater utility the parts list page may be removed to open into a full two-page spread of uninterrupted listings.

The second eight-page section contains the remainder of the service material such as the component part identification in the chassis views, the voltage and resistance charts, etc. Any of this data can be removed for simultaneous use with the schematic diagram. To provide a greater clarity and ease of identification, two bottom chassis views are given with capacitors and resistors identified separately.

Individual page sections are identified as to model number and page number so that they may be returned to the proper envelope in the correct order for future use.

HOWARD W. SAMS & CO., INC. : **Indianapolis , Indiana**

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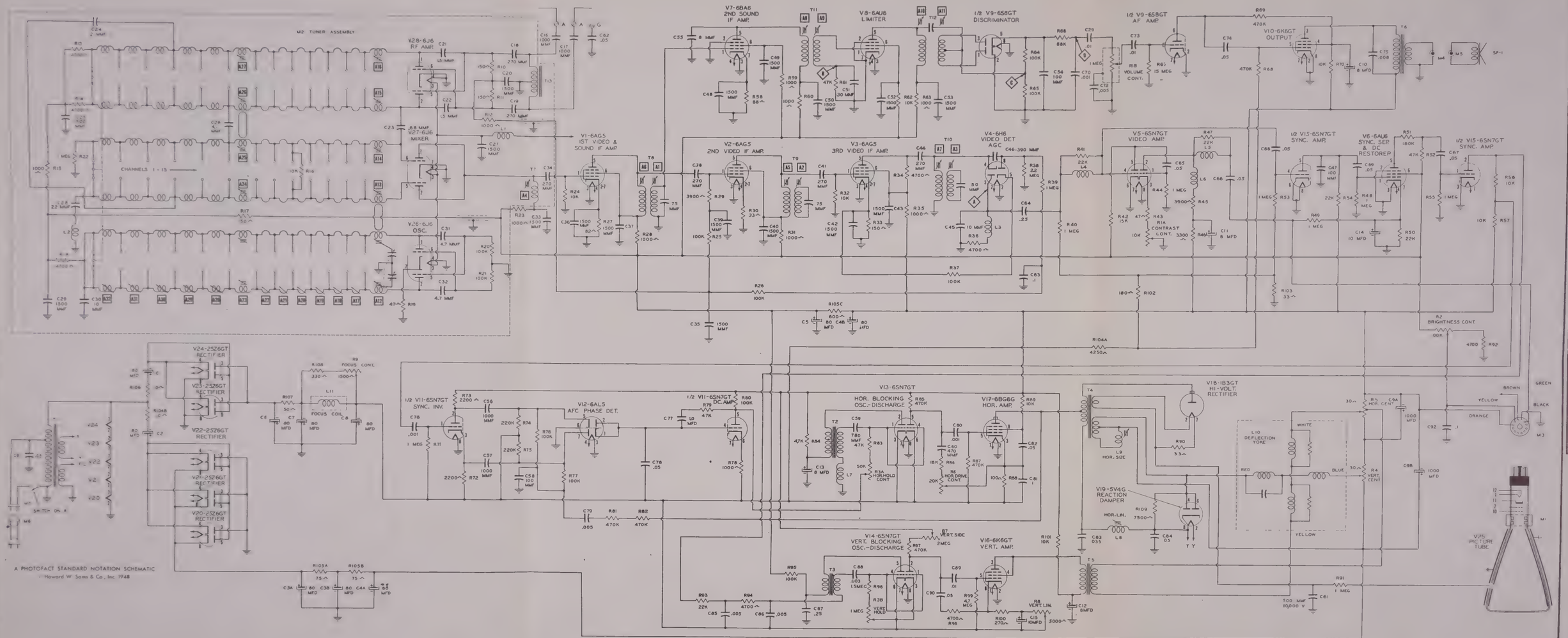
DATE 9/48-#4816-25 SET #46-FOLDER #25

EMERSON MODELS
571, 606 (Ch. 120066)



EMERSON MODELS
571, 606 (Ch. 120066)

EMERSON MODELS
571, 606 (Ch. 120066)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	1st Video & Sound IF Amp.	800535	6AG5	7BD	
V2	2nd Video IF Amp.	800535	6AG5	7BD	
V3	3rd Video IF Amp.	800535	6AG5	7BD	
V4A	Video Det. & AGC	800330	6H6	7Q	
V4B	Video Det. & AGC	800541	6AL5	6BT	
V5	Video Amp.	800380	6SN7GT	8BD	
V6	Sync. Separator & DC Rest.	800533	6AU6	7BK	
V7	2nd Sound IF Amp.	800531	6BA6	7BK	
V8	Limiter	800533	6AU6	7BK	
V9	Disc.-AF Amp.	800015	6S8GT	8CB	
V10	Power Output	800016	6K6GT	7S	
V11	Sync. Inv.-DC Amp.	800380	6SN7GT	8BD	
V12	AFC Phase Det.	800541	6AL5	6BT	
V13	Hor. Blocking Osc.-Discharge	800380	6SN7GT	8BD	
V14	Ver. Blocking Osc.-Discharge	800380	6SN7GT	8BD	
V15	Sync. Amp.	800380	6SN7GT	8BD	
V16	Ver. Amp.	800016	6K6GT	7S	
V17	Hor. Amp.	800004	6BG6-G	5BT	
V18	High Volt. Rect.	800450	1B3-GT/8016	3C	
V19	Reaction Damper	800011	5V4G	5L	
V20	Rectifier	800480	25Z6GT	7Q	
V21	"	800480	25Z6GT	7Q	
V22	"	800480	25Z6GT	7Q	
V23	"	800480	25Z6GT	7Q	
V24	"	800480	25Z6GT	7Q	
V25	Picture Tube	810000	10BP4		
V26	Osc.	800536	6J6	7BF	Part of Tuning Unit 950049
V27	Mixer	800536	6J6	7BF	
V28	RF Amplifier	800536	6J6	7BF	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	925089		UP7A474		D-10200	Doubler Cap.
B	80	150	925098					Alternate Part Doubler Cap.-See Note 1
C2	80	175	925099					
C3A	80	300	925086		UP8830	DY-TV-2x80-300	D-9447	▲ Filter
B	80	300						■ "
C4A	80	300	925087		UP8830	DY-TV-2x80-300	D-9446	▲ " - See Note 2
B	80	300						■ "
C5	80	300	925088		UP8830	DY-TV-80-300	D-9449	" - " " "
C6	80	250	925091		UP8830	DY-TV-80-250	D-10201	■ "
C7	80	250	925093		UP8830	DY-TV-80-250	EL-245*	"
C8	80	250	925093		UP8830		EL-245*	
C9A	1000	15	925092		UP11M-15	DY-TV-2x1000-15	D-10202	■ Hor. Cent. Cont. Byp.- See Note 3
B	1000	15						▲ Vert. Cent. Cont. Byp.
C10	8	250	925111	PRS250/8	BR835	M-TV-8-250	UT-82	Decoup. Filter
C11	8	250	925111	PRS250/8	BR835	M-TV-8-250	UT-82	" "
C12	8	250	925111	PRS250/8	BR835	M-TV-8-250	UT-82	" "
C13	8	250	925111	PRS250/8	BR835	M-TV-8-250	UT-82	" "
C14	10	50	925072	PRS50/10	BR105	M-TV-10-50	TA-510	DC Restorer Cath. Byp.
C15	10	25	925180	PRS25/10	BR102A	M-TV-10-25	TA-10	Vert. Lin. Cont. Byp.- See Note 4
C16A	1000		910013	1467-001	1W5D1	MW.5-21	1FM-21	Ant. Coupling
B	1000		928003					" " -Cer.
C17A	1000		910013	1467-001	1W5D1	MW.5-21	1FM-21	" "
B	1000		928003					" " "
C18	270							" " "
C19	270							" " "
C20	1500	400	928006					RF Bypass-Cer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	10KΩ	½				Contrast Control-Front Section
B	1 Meg.	½	390034			Volume Control-Rear Section
C	Switch					Power Switch
R2A	100KΩ	½	390032	D11-128 A	M-48-S	Brightness Control
B	Shaft				Not Req.	Attach to R2A per instructions
R3A	50KΩ	½	390036			Hor. Hold Control-Rear Section
B	1 Meg.	½				Vert. Hold Control-Front Section
R4	30Ω		390033		43-30CT	Vert. Centering Control tapped @ 15Ω
R5	30Ω		390033			Hor. Centering Control tapped @ 15Ω
R6	20KΩ	½	390035	D11-120 E	AM-40-SKSS-3	Hor. Drive Control
R7A	2 Meg.	½	390038		AM-33-S	Vert. Size Control
B	Shaft				KSS-3	Attach to R7A per instructions
R8A	5000Ω	½	390039	D11-114 E	AM-19-S	Vertical Linearity Control
B	Shaft				KSS-3	Attach to R8A per instructions
R9	1500Ω	4	390037		10-1500CT	Focus Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES	
R10	150Ω	½	340292		Br.-Grn.-Br. RF Grid	± 10%
R11	150Ω	½	340292		Br.-Grn.-Br. " "	± 10%
R12	1000Ω	½	340492	BTS-1000	Br.-Blk.-Red AGC Network	± 10%
R13	4700Ω	½	340652	BTS-4700	Yl.-Vi.-Red RF Decoupling	
R14	4700Ω	½	340652	BTS-4700	Yl.-Vi.-Red " "	
R15	1000Ω	½	350492	BTS-1000	Br.-Blk.-Red " "	
R16	10KΩ	½	340732	BTS-10K	Br.-Blk.-Or. Mixer Input Shunt	± 10%
R17	150Ω	½	340292		Br.-Grn.-Br. Decoupling	± 10%
R18	4700Ω	½	350652	BTS-4700	Yl.-Vi.-Red Osc. Decoupling	
R19	47Ω	½	350172		Yl.-Vi.-Blk. Osc. Cathode	
R20	100KΩ	½	350972	BTS-100K	Br.-Blk.-Yl. Osc. Grid	
R21	100KΩ	½	350972	BTS-100K	Br.-Blk.-Yl. " "	
R22	1 Meg.	½	351212	BTS-1 Meg.	Br.-Blk.-Grn. Mixer Grid	
R23	1000Ω	½	340492	BTS-1000	Br.-Blk.-Red Mixer Decoupling	± 10%
R24	10KΩ	½	330731	BTS-10K-5%	Br.-Blk.-Or. 1st Video IF Grid	± 5%
R25	100KΩ	½	340972	BTS-100K	Br.-Blk.-Yl. AGC Network	± 10%
R26	100KΩ	½	340972	BTS-100K	Br.-Blk.-Yl. " "	± 10%
R27	82Ω	½	340232		Gray-Red-Blk. 1st Video IF Cathode	± 10%
R28	1000Ω	½	340492	BTS-1000	Br.-Blk.-Red 1st Video IF Decoupling	± 10%
R29	3900Ω	½	340362	BTS-3900	Or.-Wh.-Red 2nd Video IF Grid	± 10%
R30	33Ω	½	340132		Or.-Or.-Blk. 2nd Video IF Cathode	± 10%
R31	1000Ω	½	340492	BTS-1000	Br-Blk.-Red 2nd Video IF Decoupling	± 10%
R32	10KΩ	½	330732	BTS-10K-5%	Br.-Blk.-Or. 3rd Video IF Grid	± 5%
R33	150Ω	½	340292		Br.-Grn.-Br. 3rd Video IF Cathode	± 10%
R34	4700Ω	½	330652	BTS-4700-5%	Yl.-Vi.-Red 3rd Video IF Plate	± 5%
R35	1000Ω	½	340492	BTS-1000	Br.-Blk.-Red 3rd Video IF Decoupling	± 10%
R36	4700Ω	½	330652	BTS-4700-5%	Yl.-Vi.-Red Video Det. Diode Load	± 5%
R37	100KΩ	½	340972	BTS-100K	Br.-Blk.-Yl. Delayed AGC Network	± 10%
R38	2.2 Meg.	½	341292	BTS-2.2 Meg.	Red-Red-Grn. AGC Diode Load	± 10%
R39	1 Meg.	½	341212	BTS-1 Meg.	Br.-Blk.-Grn. AGC Filter Network	± 10%
R40	1 Meg.	½	341212	BTS-1 Meg.	Br.-Blk.-Grn. Video Amp. Grid	± 10%
R41	22KΩ	½	340812	BTS-22K	Red-Red-Or. Peaking Coil Shunt	± 10%
R42	15KΩ	½	330532	BTS-15K-5%	Br.-Grn.-Or. 1st Video Amp. Plate	± 5%
R43	47Ω	½	340172		Yl.-Vi.-Blk. 2nd Video Amp. Cathode	± 10%
R44	1 Meg.	½	341212	BTS-1 Meg.	Br.-Blk.&Grn. 2nd Video Amp. Grid	± 10%
R45	3900Ω	½	340632	BTS-3900	Or.-Wh.-Red 2nd Video Amp. Plate	± 10%
R46	3300Ω	½	340612	BTS-3300	Or.-Or.-Red 2nd Video Amp. Decoupling	± 10%
R47	22KΩ	½	340812	BTS-22K	Red-Red-Or. Peaking Coil Shunt	± 10%
R48	1 Meg.	½	341212	BTS-1 Meg.	Br.-Blk.-Grn. DC Restorer Grid	± 10%
R49	1 Meg.	½	341212	BTS-1 Meg.	Br.-Blk.-Grn. Picture Tube Grid	± 10%
R50	22KΩ	½	340812	BTS-22K	Red-Red-Or. DC Restorer Cathode	± 10%
R51	180KΩ	½	341032	BTS-180K	Br.-Gray-Yl. DC Restorer Plate	± 10%
R52	47KΩ	½	340892	BTS-47K	Yl.-Vi.-Or. DC Restorer Plate	± 10%
R53	1 Meg.	½	341212	BTS-1 Meg.	Br.-Blk.-Grn. 1st Sync. Amp. Grid	± 10%
R54	22KΩ	½	340812	BTS-22K	Red-Red-Or. 1st Sync. Amp. Plate	± 10%
R55	1 Meg.	½	341212	BTS-1 Meg.	Br.-Blk.-Grn. 2nd Sync. Amp. Grid	± 10%
R56	10KΩ	½	340732	BTS-10K	Br.-Blk.-Or. 2nd Sync. Amp. Plate	± 10%
R57	10KΩ	½	340732	BTS-10K	Br.-Blk.-Or. 2nd Sync. Amp. Plate	± 10%
R58	68Ω	½	340212		Blue-Gray-Blk. Sound IF Cathode	± 10%
R59	1000Ω	½	340492	BTS-1000	Br.-Blk.-Red Sound IF Screen	± 10%

VIDEO IF ALIGNMENT

Waveforms shown may be inverted depending on the number of amplifying stages in the vertical amplifier of the particular scope being used.

In the alignment notes the sweep width is given. Some generators are calibrated in deviation. The frequency deviation, which is plus and minus, is, by definition, half the sweep width.

The marker pip signal required in Steps 9, 10 and 11 is coupled to one of the dipole terminals. This signal should be unmodulated and derived from an accurately calibrated signal generator. Attenuate the signal so that a small "pip" is visible. A strong signal will cause undesirable AGC action and will distort or swamp the picture.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the scope for horizontal deflection.

The schematic of the dummy mixer tube is given in Figure 1.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	5000MMF.	High side to dummy mixer cathode. Low side to chassis.	21.25MC (Unmodulated)	3	DC probe to Point A (Pin 3 of V4). Common to chassis.	A1,A2.	Adjust for minimum deflection.
2	5000MMF.	"	27.25MC	3	"	A3	"
3	5000MMF.	"	23.0 MC	3	"	A4	Adjust for maximum deflection.
4	5000MMF.	"	25.25MC	3	"	A5	"
5	5000MMF.	"	23.4 MC	3	"	A6	"
6	5000MMF.	"	24.5 MC	3	"	A7	"
7	Repeat Steps 1 & 2.						Remove dummy mixer and replace mixer tube. Remove VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8	Direct	High side to one ant. terminal. Low side to chassis.	63MC (Freq. Mod 10MC sweep)		3	Vertical input to Point A in series with 22KΩ carbon resistor. Low side to chassis.		Leave FM signal generator at this setting throughout Steps 9 - 12.
9	Direct	High side of marker gen. to other ant. terminal. Low side to chassis.	"	65.75MC (Pure RF)	3	"		Adjust fine tuning control for placement of marker pip as shown in Fig. 2. Leave at this setting for Steps 10, 11 & 12.
10	Direct	"	"	61.25MC	3	"	A5	Adjust for placement of marker pip as shown in Fig. 2.
11	Direct	"	"	64.5 MC	3	"	A4	"
12	Direct	"	"	-	3	"	A6,A7	Make minor adjustments, if necessary, for proper slope shape and band width per Fig. 2.

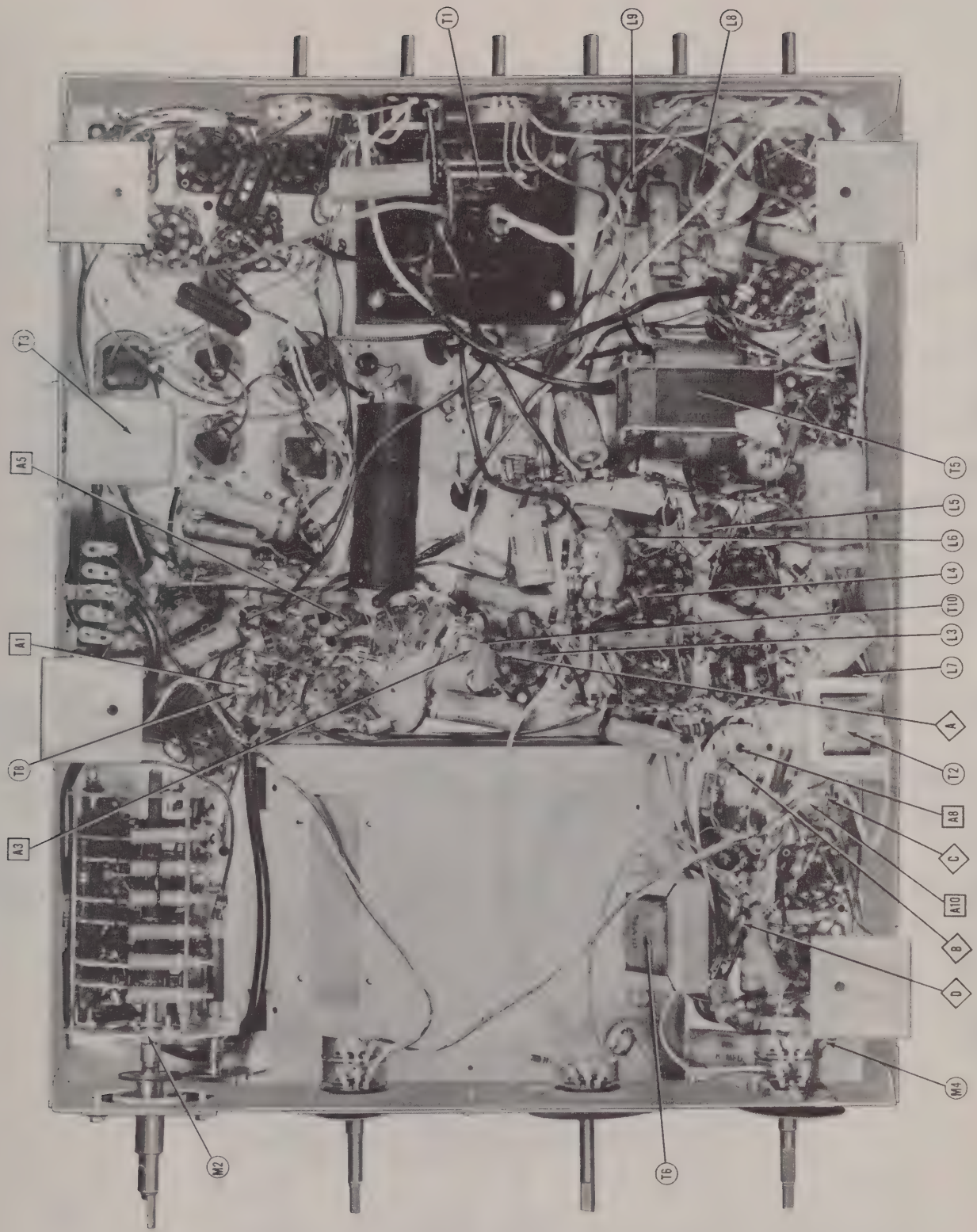
SOUND IF ALIGNMENT

Loosely couple the signal from the marker generator to the input by placing output lead near the FM signal generator output lead. Use only enough signal to give visible pip. Set marker generator to produce a 21.25MC unmodulated signal for use in Steps 13-16 inclusive.

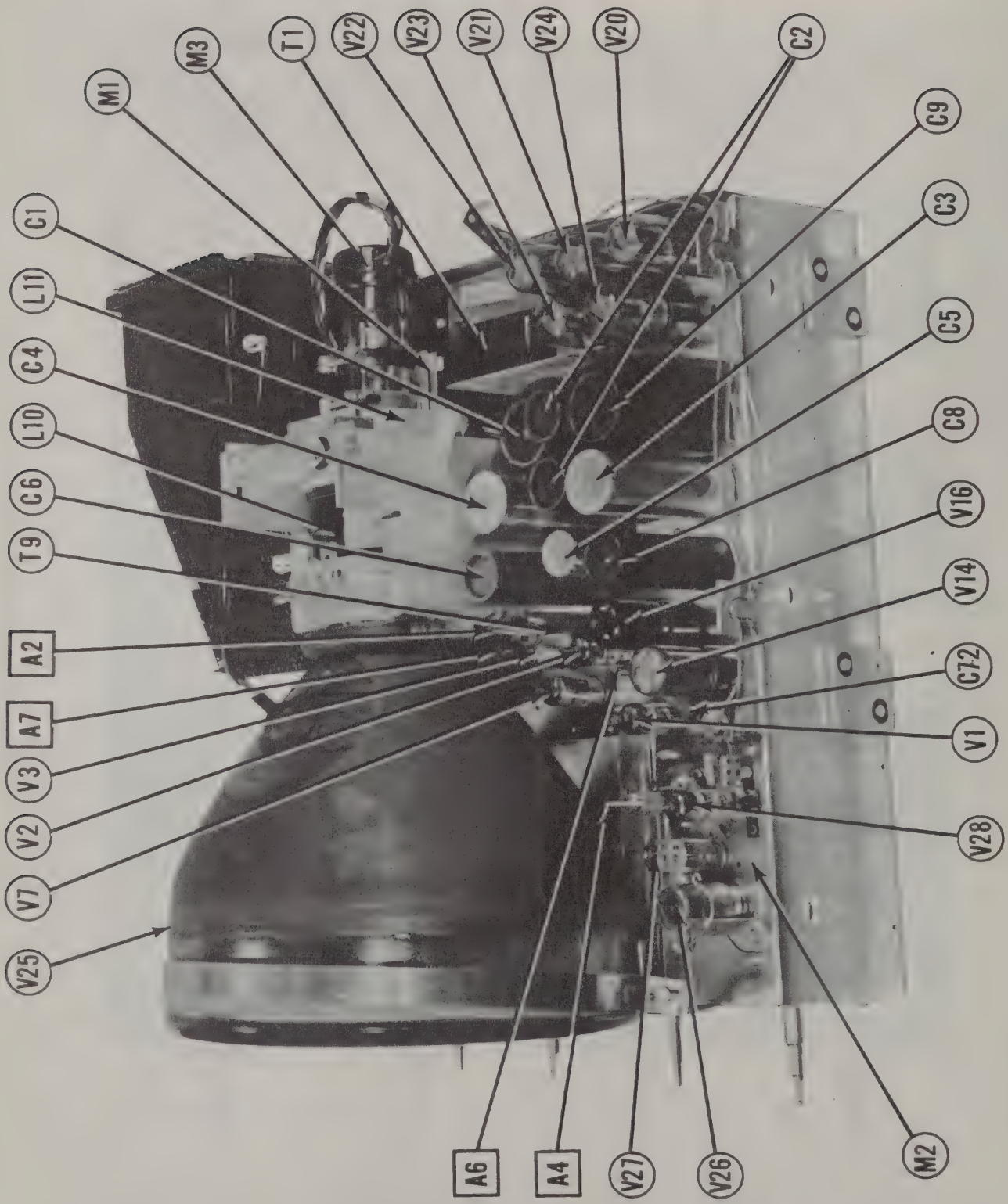
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13	5000MMF.	High side to Pin #1 of 1st Video IF Amp. V-1. Low side to chassis.	21.25MC (Freq. Mod. 600KC Sweep)	3	Vertical input to Point A. Low side to chassis.	A8,A9	Adjust for maximum amplitude and symmetry with marker pip at peak of curve per Fig. 3.
14	5000MMF.	"	"	3	"	A1	"
15	500MMF.	"	"	3	Vertical input to Point B. Low side to chassis.	A10	Adjust for maximum amplitude and symmetry with marker pip at peak of curve per Fig. 3.
16	5000MMF.	"	"	3	Vertical input to Point D. Low side to chassis.	A11	Adjust for maximum straightness of diagonal line with marker pip at center of line per Fig. 4. Continue with Step 17.

ALTERNATE SOUND IF ALIGNMENT USING VTVM

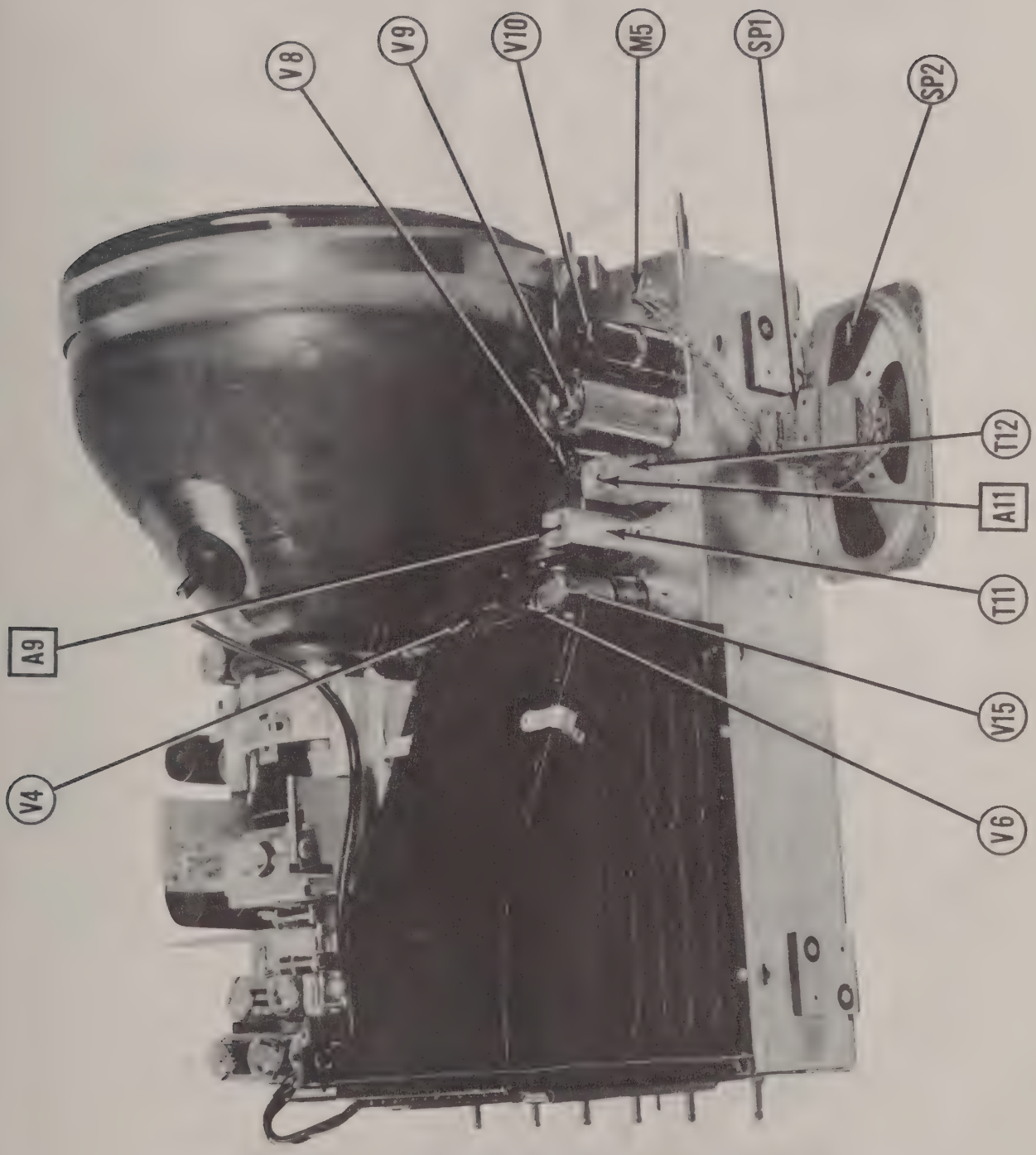
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13	5000MMF.	High side to Pin #1 of 1st Video IF Amp. V-1. Low side to chassis.	21.25MC (Unmodulated)	3	DC probe to Point A. Common to chassis.	A8,A9, A1	Adjust for maximum deflection.
14	5000MMF.	"	"	3	DC probe to Point B. Common to chassis.	A10	"
15	5000MMF.	"	"	3	DC probe to Point D. Common to chassis.	A11	Adjust for zero reading. (Make certain readings of opposite polarity are obtained on each side of zero setting.)
16	5000MMF.	"	Tune 75KC above and below 21.25MC and note meter readings.	3	"	A10	Adjust A10, if necessary, for equal readings (opposite polarity) 75KC above and below 21.25MC.



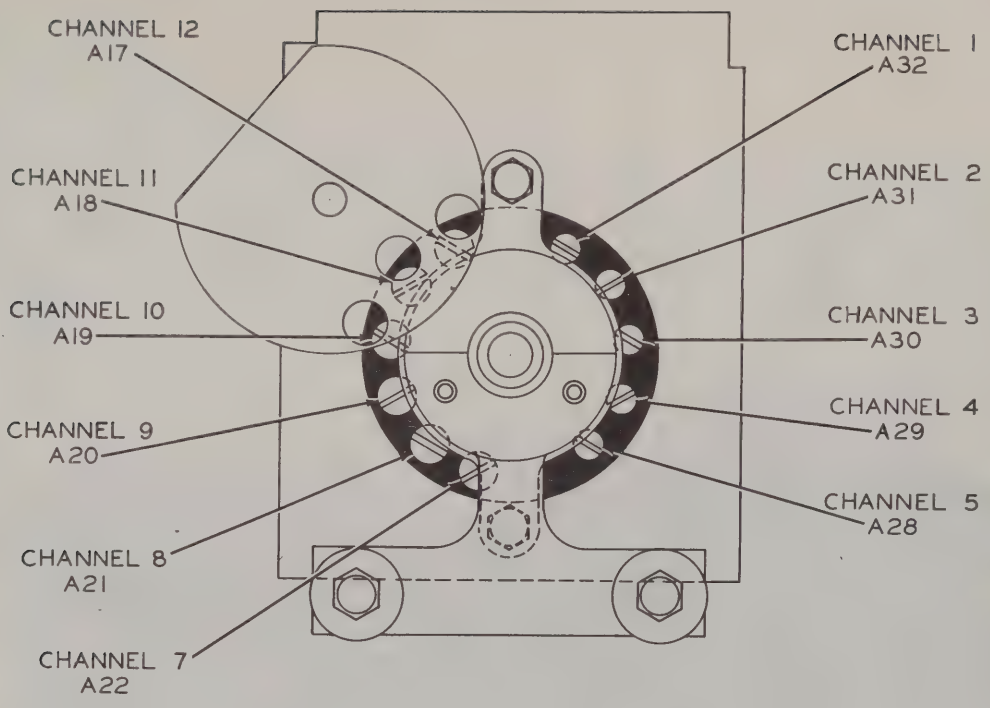
CHASSIS BOTTOM VIEW—TRANSFORMER, INDUCTOR AND ALIGNMENT IDENTIFICATION.



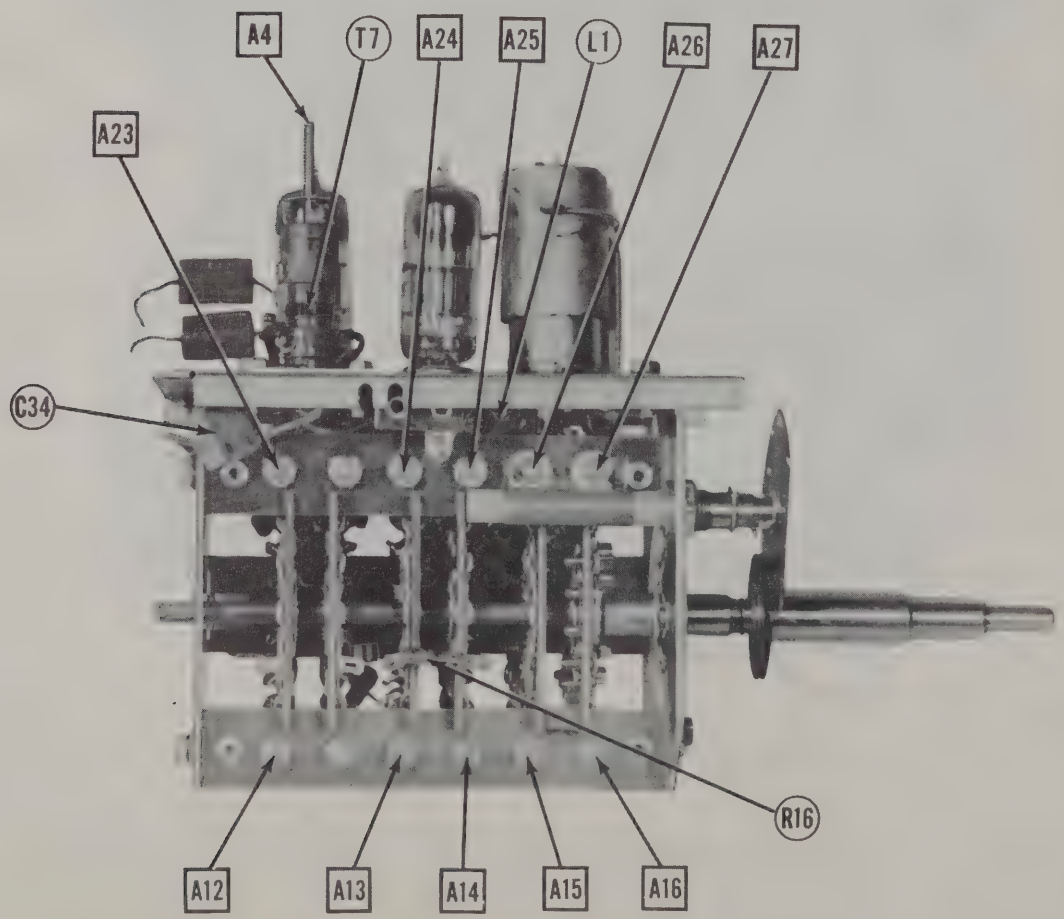
CHASSIS TOP VIEW-RIGHT SIDE



CHASSIS TOP VIEW–LEFT SIDE



RF OSCILLATOR ALIGNMENT POINTS



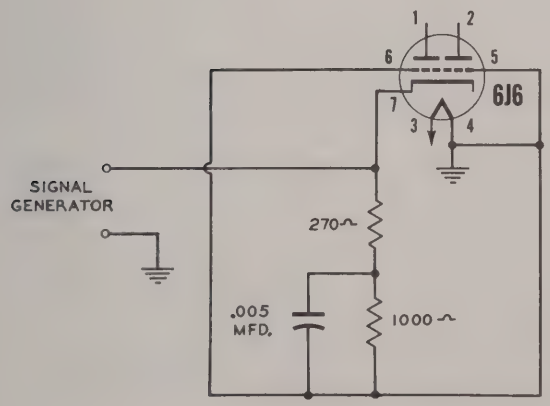
TUNER ASSEMBLY-LEFT SIDE

RF ALIGNMENT—CHANNELS 1-13

Set fine tuning control to a position approximately 140° from its full counter-clockwise position. This aligns the holes in the drive disc with the adjustment screws on the oscillator switch wafer. Do not change this setting during entire r-f alignment.

Attenuate signal from marker generator to give as small a "pip" as possible to prevent AGC action.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17	300Ω carbon res.	High side to one ant. terminal. Low side to chassis. High side of marker generator to other ant. terminal. Low side to chassis.	213MC (Freq. Mod. 10MC Sweep)	215.75MC	13	Vertical input to Point A in series with 22KΩ carbon resistor. Low side to chassis.	A12	Adjust for placement of sound marker per Fig. 2.
18	300Ω carbon res.	"	"	"	13	"	A13,A14, A15,A16	Adjust for shaping to conform to Fig. 2.
19	300Ω carbon res.	"	207MC (Freq. Mod. 10MC Sweep)	209.75MC	12	"	A17	Adjust for placement of sound marker per Fig. 2.
20	300Ω carbon res.	"	201MC (Freq. Mod. 10MC Sweep)	203.75MC	11	"	A18	"
21	300Ω carbon res.	"	195MC (Freq. Mod. 10MC Sweep)	197.75MC	10	"	A19	"
22	300Ω carbon res.	"	189MC (Freq. Mod. 10MC Sweep)	191.75MC	9	"	A20	"
23	300Ω carbon res.	"	183MC (Freq. Mod. 10MC Sweep)	185.75MC	8	"	A21	"
24	300Ω carbon res.	"	177MC (Freq. Mod. 10MC Sweep)	179.75MC	7	"	A22	"
25	300Ω carbon res.	"	85MC (Freq. Mod. 10MC Sweep)	87.75MC	6	"	A23	Adjust for placement of sound marker per Fig. 2.
26	300Ω carbon res.	"	"	"	6	"	A24,A25 A26,A27	Adjust for shaping to conform to Fig. 2.
27	300Ω carbon res.	"	79MC (Freq. Mod. 10MC Sweep)	81.75MC	5	"	A28	Adjust for placement of sound marker per Fig. 2.
28	300Ω carbon res.	"	69MC (Freq. Mod. 10MC Sweep)	71.75MC	4	"	A29	"
29	300Ω carbon res.	"	63MC (Freq. Mod. 10MC Sweep)	65.75MC	3	"	A30	"
30	300Ω carbon res.	"	57MC (Freq. Mod. 10MC Sweep)	59.75MC	2	"	A31	"
31	300Ω carbon res.	"	47MC (Freq. Mod. 10MC Sweep)	49.75MC	1	"	A32	"



DUMMY MIXER TUBE

NOTE: CAREFULLY BEND PIN 7 AT RIGHT ANGLE. CONNECT PINS 5 & 6 TO PIN 4 WHICH IS GROUNDED AT THE SOCKET. CONNECT OTHER COMPONENTS AS SHOWN.

FIG. 1

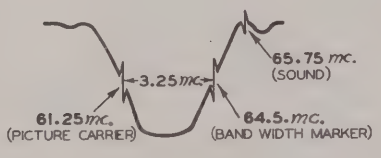


FIG. 2

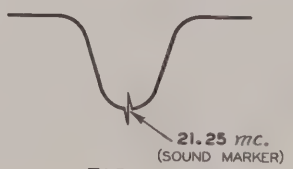


FIG. 3

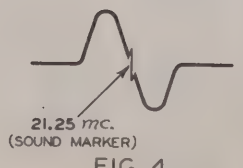


FIG. 4

ALIGNMENT WAVEFORMS AND DUMMY MIXER

C21	1.5							RF Neutralizing-Cer.
C22	1.5							" " "
C23	.68							RF Coupling-Cer.
C24	2							" " "
C25	1500	400	928006					RF Decoupling-Cer.
C26	4.7							RF Coupling-Cer.
C27	1500	400	928006					Fil. Bypass-Cer.
C28	22							RF Bypass-Cer.
C29	1500	400	928006					RF Decoupling-Cer.
C30	10							" " "
C31	4.7	400	923004					Osc. Feedback-Cer.
C32	4.7	400	923004					" " "
C33	1500	400	928006					RF Decoupling-Cer.
C34	270	400	910015	1468-00025	5W5T25	MO.5-325	1FM-325	IF Decoupling
C35	1500	400	928006					AGC Filter-Cer.
C36	1500	400	928006					1st Video IF Cath.Byp.-Cer.
C37	1500	400	928006					1st Video IF Screen Byp. "
C38	270	400	910015	1468-00025	5W5T25	MO.5-325	1FM-325	IF Coupling
C39	1500	400	928006					AGC Filter-Cer.
C40	1500	400	928006					2nd Video IF Screen Byp. "
C41	270	400	910015	1468-00025	5W5T25	MO.5-325	1FM-325	IF Coupling
C42	1500	400	928006					3rd Video IF Cath. Byp. "
C43	1500	400	928006					3rd Video IF Screen Byp. "
C44	270	400	910015	1468-00025	5W5T25	MO.5-325	1FM-325	IF Coupling
C45	10	400	910130	1469-00001	5R5Q1	MOS.5-41	MS-41	Fixed Trimmer
C46	390		910359					IF Coupling
C47	100		910010					RF Bypass-Cer.
C48	1500	400	928006					Sound IF Cath. Byp.-Cer.
C49	1500	400	928006					Sound IF Screen Byp.-Cer.
C50	1500	400	928006					Sound IF Plate Decoup."
C51	30	400	910290		5R5Q3	MOS.5-43	MS-43	Limiter Grid Filter
C52	1500	400	928006					Limiter Screen Byp.-Cer.
C53	1500	400	928006					Limiter Plate Decoup.-Cer.
C54	100		910010					RF Bypass-Cer.
C55	5		928017					Fixed Trimmer-Cer.-See Note 5
C56	1000	400	910140	1467-001	1W5D1	MW.5-21	1FM-21	Hor. Sync. Coupling
C57	1000	400	910140	1467-001	1W5D1	MW.5-21	1FM-21	" " "
C58	100		910010					AFC Filter-Cer.
C59	780	400	910023					Hor. Osc. Grid
C60	470	400	910017					Hor. Discharge
C61	500	10000	923003					High Volt. Filter Titanium Oxide
C62	.05	400	922101	484-05	DT4S5	ST-4-05	TC-15	Ext. Ground Isolation
C63	.1	200	923067	484-.1	DT2P1	ST-2-1	TC-1	AGC Filter
C64	.25	200	923080	484-.25	DT2P25	ST-2-25	TC-2	Video Coupling
C65	.05	400	923062	484-05	DT4S5	ST-4-05	TC-15	" "
C66	.05	400	923062	484-05	DT4S5	ST-4-05	TC-15	" "
C67	.05	400	923062	484-05	DT4S5	ST-4-05	TC-15	Sync. Coupling
C68	.05	400	923062	484-05	DT4S5	ST-4-05	TC-15	" "
C69	.05	400	923062	484-05	DT4S5	ST-4-05	TC-15	" "
C70	.001	600	923079	684-001	DT6D1	ST-6-001	TC-21	De-emphasis
C71	.01	200	923076	484-01	DT2S1	ST-4-01	TC-11	Audio Coupling
C72	.005	400	923078	484-005	DT6D5	ST-6-005	TC-25	Vol. Cont. Isolation
C73	.01	200	923076	484-01	DT2S1	ST-4-01	TC-11	Audio Coupling
C74	.05	400	923062	484-05	DT4S5	ST-4-05	TC-15	" "
C75	.008	400	923063	484-0075				Output Plate Bypass
C76	.001	400	923071	484-001	DT6D1	ST-6-001	TC-21	Sync. Coupling
C77	1.0	200	923072	484-1		SDH-4-1M	TC-10	Phase Shift Cap.
C78	.05	200	923068	484-05	DT2S5	ST-4-05	TC-15	Diode Load Cap.
C79	.005	600	923077	684-005	DT6D5	ST-6-005	TC-25	Hor. AFC Coupling
C80	.001	600	923079	684-001	DT6D1	ST-6-001	TC-21	Hor. Sweep Coupling
C81	.1	200	923067	484-.1	DT2P1	ST-2-1	TC-1	Hor. Amp. Cath. Bypass
C82	.05	600	923073	684-05	DT6S5	ST-6-05	TC-15	Hor. Amp. Screen Byp.
C83	.035	600	923074					Damper Filter
C84	.05	600	923073	684-05	DT6S5	ST-6-05	TC-15	" "
C85	.005	400	923078	484-005	DT6D5	ST-6-005	TC-25	Integrator Net.
C86	.005	400	923078	484-005	DT6D5	ST-6-005	TC-25	" "
C87	.25	400	923066	484-.25	DT4P25	ST-4-25	TC-2	Vert. Osc. Decoup.
C88	.003	600	923069	684-003	DT6D3	ST-6-003	TC-23	Vert. Osc. Grid
C89	.01	600	923075	684-01	DT6S1	ST-6-01	TC-11	Vert. Sweep Coupling
C90	.05	600	923073	684-05	DT6S5	ST-6-05	TC-15	Vert. Discharge
C91	.05	400	923062	484-05	DT4S5	ST-4-05	TC-15	Line Filter
C92	.1	200	923067	484-.1	DT2P1	ST-2-1	TC-1	Pict. Tube Cath. Byp.

*Parallel sections to obtain desired capacity.
Note 1-Some models use two 40 MFD 150V in parallel in this application. Part #925085.
Note 2-Alternate Part #925096. 80-80-60MFD, 250V-250V-200V. Replaces Item C4 & C5.
Note 3-Alternate Part #925097. 1000-1000MFD. 15V.
Note 4-Some models use a 10 MFD. 50V, Part #925072 in this application.
Note 5-Some models use an 8 MMF. ceramic capacitor, ± .25 MMF. in this application.

R60	1000Ω	±	340492	BTS-1000	Br.-Blk.-Red Sound IF Decoupling ± 10%
R61	47KΩ	±	340832	BTS-47K	Yl.-Vi.-Or. Limiter Grid ± 10%
R62	10KΩ	±	340732	BTS-10K	Br.-Blk.-Or. Limiter Screen Dropping ± 10%
R63	1000Ω	±	340492	BTS-10K	Br.-Blk.-Red Limiter Plate Decoupling ± 10%
R64	100KΩ	±	340972	BTS-100K	Br-Blk.-Yl. Disc. Diode Load ± 10%
R65	100KΩ	±	340572	BTS-100K	Br.-Blk.-Yl. " " " ± 10%
R66	68KΩ	±	340932	BTS-68K	Blue-Gray-Or. De-emphasis ± 10%
R67	15 Meg.	±	351492	BTS-15 Meg.	Br.-Grn.-Blue Audio Amp. Grid
R68	470KΩ	±	341132	BTS-470K	Yl.-Vi.-Yl. Power Output Grid ± 10%
R69	470KΩ	±	341132	BTS-470K	Yl.-Vi.-Yl. Audio Amp. Plate ± 10%
R70	10KΩ	±	340732	BTS-10K	Br.-Blk.-Or. Decoupling ± 10%
R71	1 Meg.	±	341212	BTS-1 Meg.	Br.-Blk.-Grn. Sync. Phase Inv. Grid ± 10%
R72	2200Ω	±	330572	BTS-2200-5%	Red-Red-Red Sync. Phase Inv. Cathode ± 5%
R73	2200Ω	±	330572	BTS-2200-5%	Red-Red-Red Sync. Phase Inv. Plate ± 5%
R74	220KΩ	±	341052	BTS-220K	Red-Red-Yl. Phase Det. Cath. Load ± 10%
R75	220KΩ	±	341052	BTS-220K	Red-Red-Yl. Phase Det. Plate Load ± 10%
R76	100KΩ	±	330972	BTS-100K-5%	Br.-Blk.-Yl. Hor. Pulse Inj. Network ± 5%
R77	100KΩ	±	330972	BTS-100K-5%	Br.-Blk.-Yl. Hor. Pulse Inj. Network ± 5%
R78	1000Ω	±	330492	BTS-1000-5%	Br.-Blk.-Red DC Amp. Cathode ± 5%
R79	47KΩ	±	340892	BTS-47K	Yl.-Vi.-Or. Phase Shift Res. ± 10%
R80	100KΩ	1	360972	BTA-100K-5%	Br.-Blk.-Yl. DC Amp. Plate ± 5%
R81	470KΩ	1	371132	BTA-470K	Yl.-Vi.-Yl. Hor. Pulse Inj. Network ± 10%
R82	470KΩ	1	371132	BTA-470K	Yl.-Vi.-Yl. " " " " ± 10%
R83	47KΩ	±	340892	BTS-47K	Yl.-Vi.-Or. Hor. Osc. Grid ± 10%
R84	4700Ω	1	370652	BTA-4700	Yl.-Vi.-Red Hor. Osc. Decoupling ± 10%
R85	470KΩ	±	331132	BTS-470K	Yl.-Vi.-Yl. Hor. Discharge Plate ± 5%
R86	18KΩ	±	340752	BTS-18K	Br.-Gray-Or. Hor. Discharge Network ± 10%
R87	470KΩ	±	341132	BTS-470K	Yl.-Vi.-Yl. Hor. Amp. Grid ± 10%
R88	100Ω	1	370252		Br.-Blk.-Br. Hor. Amp. Cathode ± 10%
R89	10KΩ	2	397014	BT-2-10K	Br.-Blk.-Or. Hor. Amp. Screen ± 10%
R90	3.3Ω	1	397041		Or.-Or.-Gold Filament Dropping ± 5%
R91	1 Meg.	±	371212	BTS-1 Meg.	Br.-Blk.-Grn. High Voltage Filter ± 10%
R92	4700Ω	±	340652	BTS-4700	Yl.-Vi.-Red Picture Tube Cathode ± 10%
R93	22KΩ	±	340812	BTS-22K	Red-Red-Or. Integrator Network ± 10%
R94	4700Ω	±	340652	BTS-4700	Yl.-Vi.-Red " " ± 10%
R95	100KΩ	1	370972	BTA-100K	Br.-Blk.-Yl. Vert. Osc. Decoupling ± 10%
R96	1.5 Meg.	±	331252	BTS-1.5 Meg.-5%	Br.-Grn.-Grn. Vert. Osc. Grid ± 5%
R97	470KΩ	±	341132	BTS-470K	Yl.-Vi.-Yl. Vert. Discharge Plate ± 10%
R98	4700Ω	±	340672	BTS-4700	Yl.-Vi.-Red Vert. Discharge Network ± 10%
R99	4.7 Meg.	±	341372	BTS-4.7 Meg.	Yl.-Vi.-Grn. Vert. Amp. Grid ± 10%
R100	270Ω	±	340352		Red-Vi.-Br. Vert. Amp. Cathode ± 10%
R101	10KΩ	1	370732	BTA-10K	Br.-Blk.-Or. Vert. Amp. Decoupling ± 10%
R102	180Ω	1	370312	BW-1-180	Br.-Gray-Br. Bias Network ± 10%
R103	33Ω	±	340132	BW-½-33	Or.-Or.-Blk. " " ± 10%
R104A	4250Ω	10	394022		Wire Wound " " ± 10%
B	10Ω	5			" " Rectifier Ballast ± 10%
R105A	75	5			" " Filter ± 10%
B	75Ω	5	394021		" " " ± 10%
C	600Ω	5			" " " ± 10%
R106	10Ω	3	394027		" " Rectifier Ballast
R107	50Ω	3	394033		" " Filter-See Note 1
R108	330Ω	3	394034	ABA-350*	" " Focus Coil Shunt ± 10%
R109	7500Ω	25	394007	DHA-7500	" " Reaction Damper Plate Load ± 5%

*Set slider at 330Ω
Note 1-Some models use three 180Ω 1 W. carbon resistors, Part #370312 in parallel in this application.

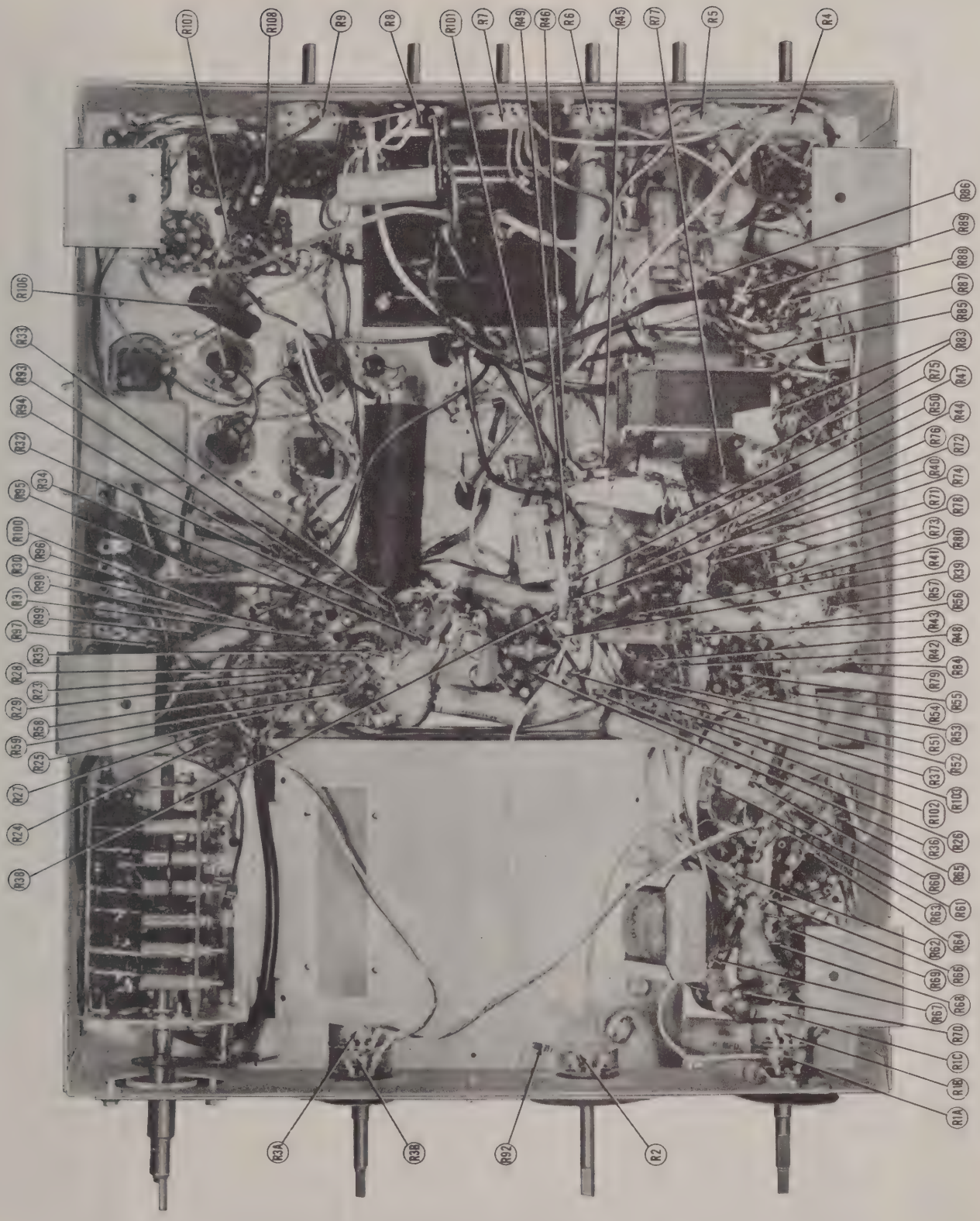
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	EMERSON PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
T-1	117V AC @ 2.14A	125V AC @ 1.41A	5V AC @ 2A.	6.1V AC @ 8.7A	730007			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RES.			REPLACEMENT DATA				INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
T2	3Ω	1.3Ω		738008				Hor. Blocking Osc. Trans.
T3	150Ω	1400Ω		738004				Vert. Blocking Osc. Trans.
T4A	390Ω tapped @ 160Ω	0Ω	7Ω tapped @ .5Ω	738000				Hor. Output Trans.
B				738009				Alternate Hor. Output Trans.
T5A	580Ω	7Ω		738010				Vert. Output Trans.
B				738011				Alternate Vert. Output Trans.

PARTS LIST & DESCRIPTION CONTINUED ON PAGE 12.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T6	7500Ω	4.1Ω	330Ω	.6Ω	734018	A3849	T22S37	A2902	Sound output transformer.

R F COILS (RF & IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
T7	1st Video & Sound IF Trans.	.2Ω		720041		Part of Tuner Assembly Part #950049
T8	2nd Video & Sound IF Trans.	.2Ω	0Ω	720042		
T9	3rd Video IF Trans.	.2Ω	0Ω	720043		
T10	4th Video IF Trans.	.2Ω	0Ω	720044		
T11	Sound IF Trans.	.2Ω	.2Ω	720027		
T12	Disc. Trans.	.5Ω	.5Ω	708008		
T13	Ant. Trans.	0Ω				Part of Tuner Assembly Part #950049
L1	Tuner Fil. Choke	0Ω				Part of Tuner Assembly Part #950049
L2	Mixer Grid Choke	.1Ω				
L3	Video Det. PeakingCoil	4Ω		708093		Inductance - 35 Micro Henry
L4	Video Peaking Coil	8.5Ω		708094		" - 125 " "
L5	"	11Ω		708095		" - 180 " "
L6	"	4Ω		708093		" - 35 " "

R F COILS (MISC.)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
L7	Hor. Osc. Grid Choke	75Ω		705009		Inductance - 3 Millihenries
L8	Hor. Linearity Coil	35Ω		708003		Slug Adjusted
L9	Hor. Size Coil	0Ω		708082		" "
L10A	Hor. Deflection Coil	14Ω		708030		
B	Vert. Deflection Coil	58Ω				
L11	Focus Coil	250Ω		708141		

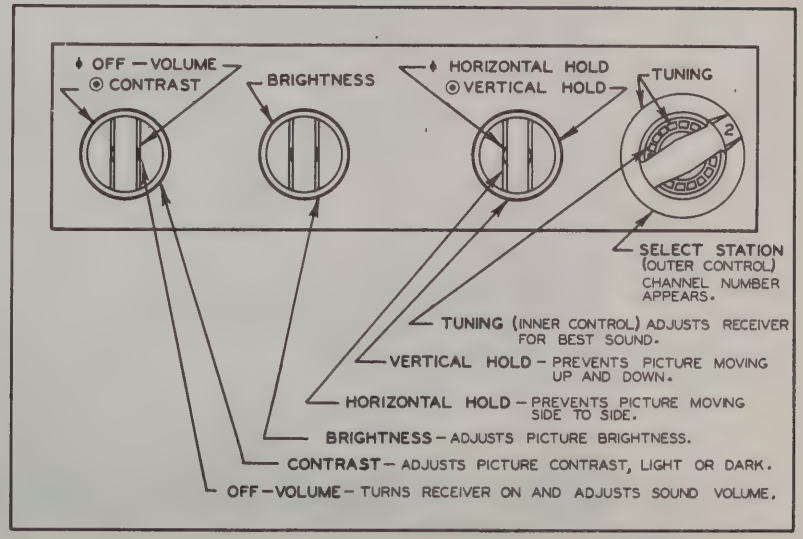
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES	VC IMP.	EMERSON PART No.	JENSEN PART No.	QUAM PART No.	
SP-1A	PM	4.1Ω	180019		46A1	Used in Model 571 only.
1B	PM		180038			Alternate Speaker for 571
1C	PM		180050			Used in Model 606 only.
	CONE DIA.	VC DIA.				
SP-2A	4"x6"	1/2"				Used in SP-1A.
2B	4"x6"	1/2"				Used in SP-1B.
2C	12"					Used in SP-1C.

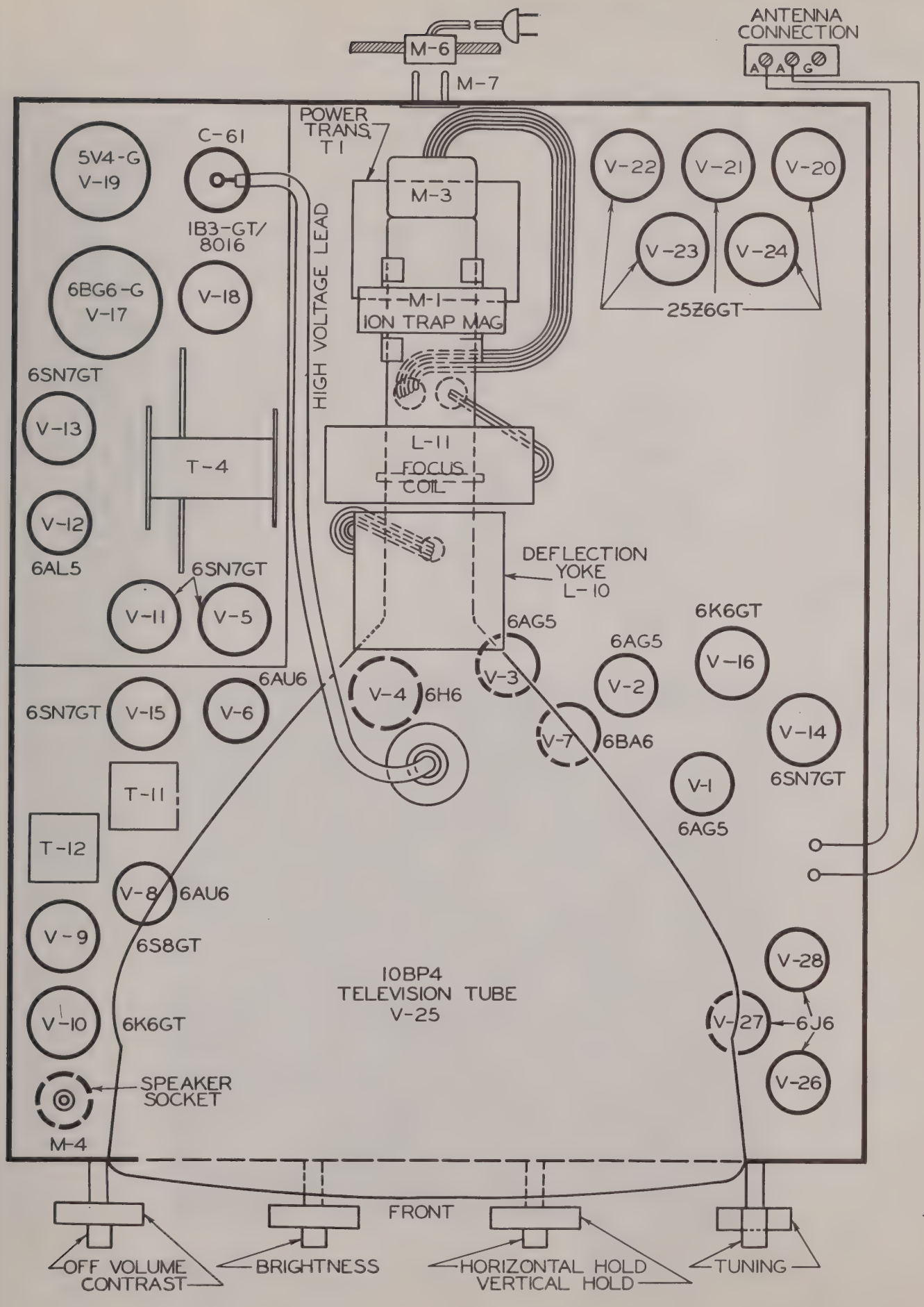
PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M1	Ion Trap	708084	Permanent Magnet Type
M2	Tuner Assembly	950049	Complete RF, Mixer and Osc. Assby.
M3	Socket and Cable	470232	Picture Tube Socket and Cable Assby.
M4	Speaker Socket	508010	
M5A	Speaker Plug	505040	
B	" "	505048	Alternate Part
M6	Interlock Socket	470339	Includes Mounting Bracket
M7	Interlock Plug	505007	
	Cabinet	140146	Used in 571 only
	Safety Glass	635010	
	Cabinet Back	620067	Used in 571 only
	Line Cord & & Plug	583014	Used in 571 only
	Knob-Fine Tuning	450036	
	Knob-Selector (With Hole)	450037	
	Knob-Selector	450031	
	Knob-Dual-Large	450032	
	Knob-Dual-Small	450034	
	Tube Front Mask	410352	


OFF — VOLUME
CONTRAST
BRIGHTNESS
HORIZONTAL HOLD
VERTICAL HOLD
TUNING
SELECT STATION (OUTER CONTROL) CHANNEL NUMBER APPEARS.
TUNING (INNER CONTROL) ADJUSTS RECEIVER FOR BEST SOUND.
VERTICAL HOLD - PREVENTS PICTURE MOVING UP AND DOWN.
HORIZONTAL HOLD - PREVENTS PICTURE MOVING SIDE TO SIDE.
BRIGHTNESS - ADJUSTS PICTURE BRIGHTNESS.
CONTRAST - ADJUSTS PICTURE CONTRAST, LIGHT OR DARK.
OFF - VOLUME - TURNS RECEIVER ON AND ADJUSTS SOUND VOLUME.

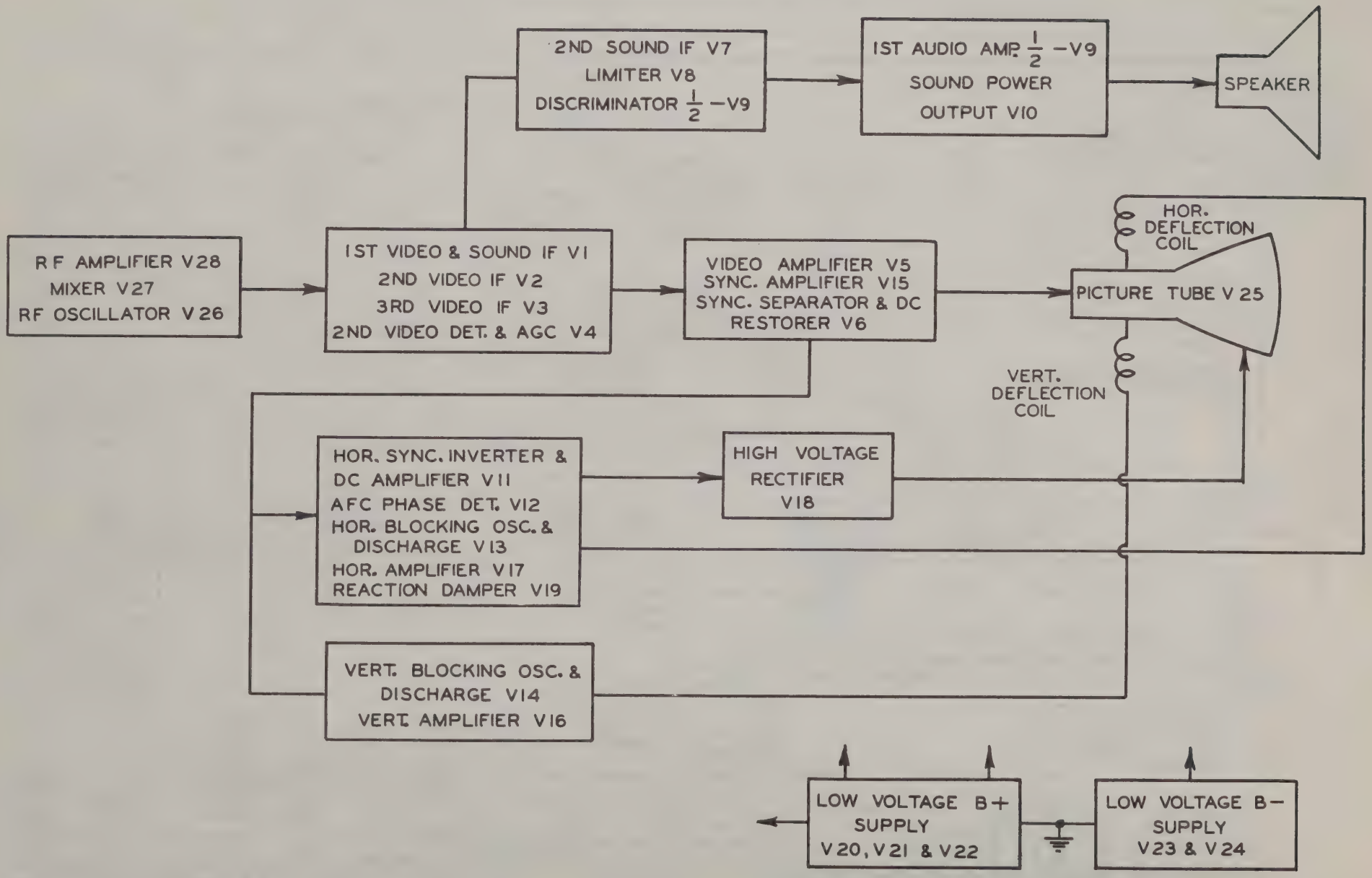
FRONT PANEL CONTROLS



TUBE PLACEMENT CHART

EMERSON MODELS 571, 606 (Ch. 120066)

BLOCK DIAGRAM



DISASSEMBLY INSTRUCTIONS

1. Remove all push-on type knobs from the front panel controls.
2. Remove the six Phillips screws holding the back panel and remove back.
3. Remove two screws holding antenna terminal strip.
4. Remove four screws from bottom.
5. Carefully slide chassis about half way out of cabinet. Lift the back end of chassis up slightly to prevent picture tube from binding on the top of the cabinet.
6. As the chassis is about half way out of the cabinet, unplug the speaker cable from the chassis. The chassis can now be removed.
7. Remove four nuts holding the speaker and remove the speaker.

PRECAUTIONS

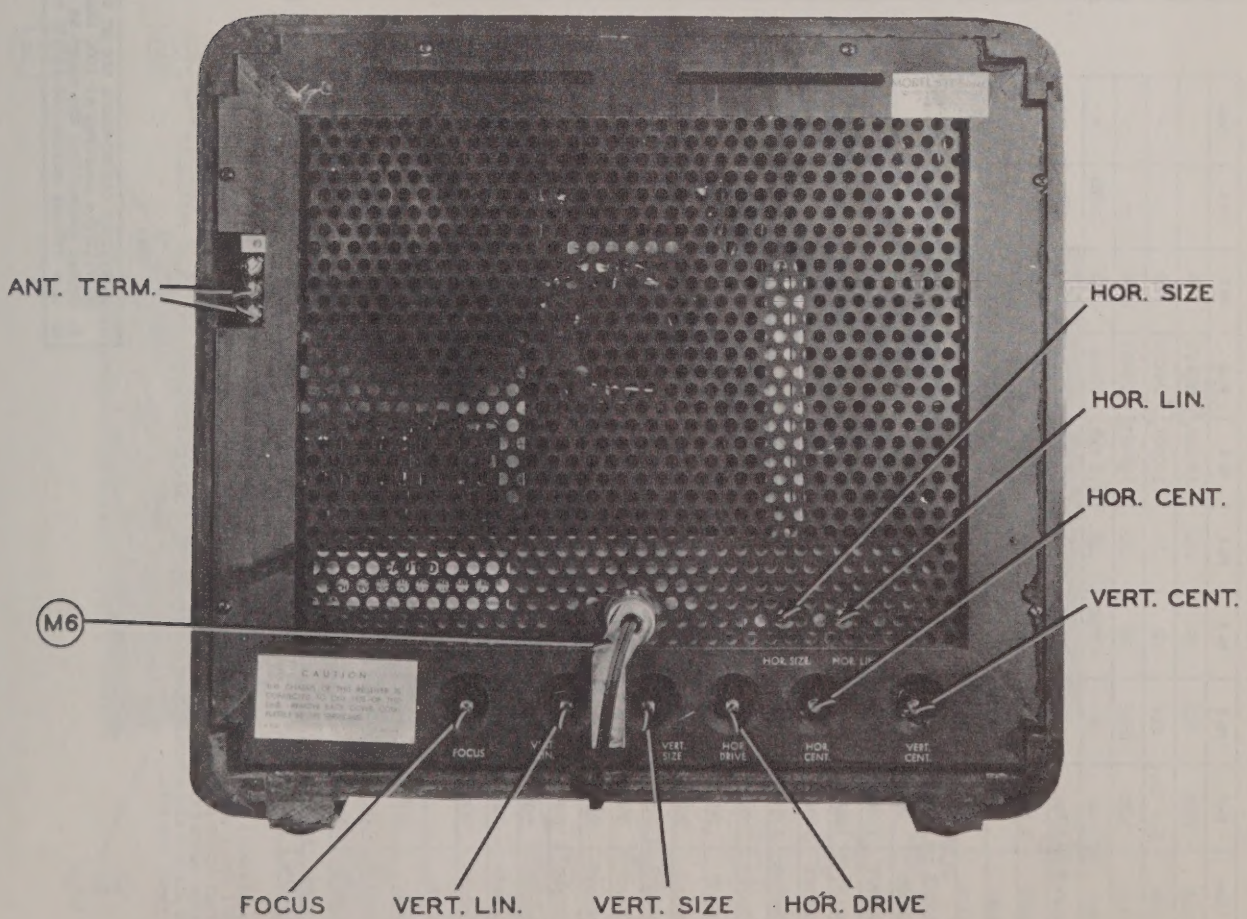
It must be remembered that television receivers employ high voltages which in some cases can be lethal. Extreme care should be exercised at all times during the service procedure. The following suggestions may be of assistance:

1. Do not locate the service bench so that it is necessary for the operator to stand on a cement floor, near any grounded pipes or metallic objects.

2. Do not measure the high voltage anode supply unless such measurement is absolutely necessary. Usually a thorough resistance check will disclose any fault in the circuit.

3. Most service men prefer to disable the high voltage supply during alignment operations. This may be done by removing the horizontal blocking oscillator tube (V13) from its socket.

4. If, during service operation, the anode supply lead should become disconnected from the cathode ray tube, the receiver should be turned off immediately and the high voltage capacitor discharged.



REAR PANEL CONTROLS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V1	6AG5	10KΩ	82Ω	0Ω	.1Ω	1800Ω†	1800Ω†	82Ω	-	-
V2	6AG5	3.5 Meg.	33Ω	0Ω	.1Ω	1800Ω†	1800Ω†	33Ω	-	-
V3	6AG5	10KΩ	150Ω	0Ω	.1Ω	6000Ω†	1300Ω†	150Ω	-	-
V4	6H6	0Ω	0Ω	4700Ω	.2Ω	2.2 Meg.	4700Ω	.1Ω	100KΩ	-
V5	6SN7GT	1 Meg.	7500Ω†	75Ω	1 Meg.	2200Ω†	0Ω	.1Ω	0Ω	-
V6	6AU6	1 Meg.	0Ω	0Ω	.1Ω	220KΩ†	800Ω†	22KΩ	-	-
V7	6BA6	0Ω	0Ω	0Ω	.1Ω	1800Ω†	1800Ω†	68Ω	-	-
V8	6AU6	50KΩ	0Ω	0Ω	.1Ω	1800Ω†	10KΩ†	0Ω	-	-
V9	6S8GT	100KΩ	0Ω	100KΩ	INF.	200KΩ	470KΩ†	.1Ω	0Ω	15 Meg.
V10	6K6GT	0Ω	0Ω	520Ω†	10KΩ†	470KΩ	210Ω	.1Ω	0Ω	-
V11	6SN7GT	1 Meg.*	2400Ω†	2200Ω*	INF.*	100KΩ†	1000Ω*	.1Ω	0Ω	-
V12	6AL5	INF.	INF.	0Ω	.1Ω	150KΩ*	0Ω	150KΩ*	-	-
V13	6SN7GT	200KΩ†	5400Ω†	0Ω*	200KΩ†	470KΩ†	0Ω*	.1Ω	0Ω	-
V14	6SN7GT	2.5 Meg*	470KΩ†	0Ω*	2.5 Meg.*	100KΩ†	0Ω*	.1Ω	0Ω	-
V15	6SN7GT	1 Meg.	20KΩ†	0Ω	1 Meg.	22KΩ†	0Ω	.1Ω	0Ω	-
V16	6K6GT	INF.	0Ω	10KΩ†	10KΩ†	5 Meg.*	5000Ω* 10KΩ*	.1Ω	300Ω* 5000Ω*	-
V17	6BG6-G	INF.	0Ω	100Ω*	0Ω*	470KΩ*	0Ω*	.1Ω	10KΩ†	7500Ω†
V18	1B3GT	INF.	INF.	INF.	INF.	INF.	INF.	INF.	INF.	7800Ω†
V19	5V4-G	INF.	7500Ω†	INF.	160Ω†	INF.	160Ω†	INF.	7500Ω†	-
V20	25Z6GT	INF.	0Ω	0Ω	80KΩ	80KΩ	INF.	10Ω	0Ω†	-
V21	25Z6GT	INF.	15Ω	0Ω	80KΩ	80KΩ	INF.	10Ω	0Ω†	-
V22	25Z6GT	INF.	16Ω	0Ω	80KΩ	80KΩ	INF.	15Ω	0Ω†	-
V23	25Z6GT	INF.	12Ω	240Ω*	1 Meg.	1 Meg.	INF.	16Ω	0Ω	-
V24	25Z6GT	INF.	12Ω	240Ω*	1 Meg.	1 Meg.	INF.	3Ω	0Ω	-
$V25	10BP4									
V26	6J6	6000Ω†	6000Ω†	.1Ω	0Ω	100KΩ	100KΩ	47Ω	-	-
V27	6J6	1800Ω†	1800Ω†	.1Ω	0Ω	1 Meg.	1 Meg.	0Ω	-	-
V28	6J6	4200Ω†	4200Ω†	.1Ω	0Ω	3 Meg.	3 Meg.	0Ω	-	-

TUBE	PIN 1	2	3	4	5	6	7	8	9	10	11	12
$V25 10BP4	0Ω	1 Meg.	INF.	INF.	INF.	INF.	INF.	INF.	INF.	200Ω†	30KΩ†	.1Ω

All resistance readings taken from chassis unless noted otherwise.
Set all front panel controls to full clockwise position.
†Readings taken from Pin #8 of V22 Rectifier Tube.
*Readings taken from Pin #6 of V14.
Where maximum and minimum readings are given, reading will vary depending on setting of rear panel controls.

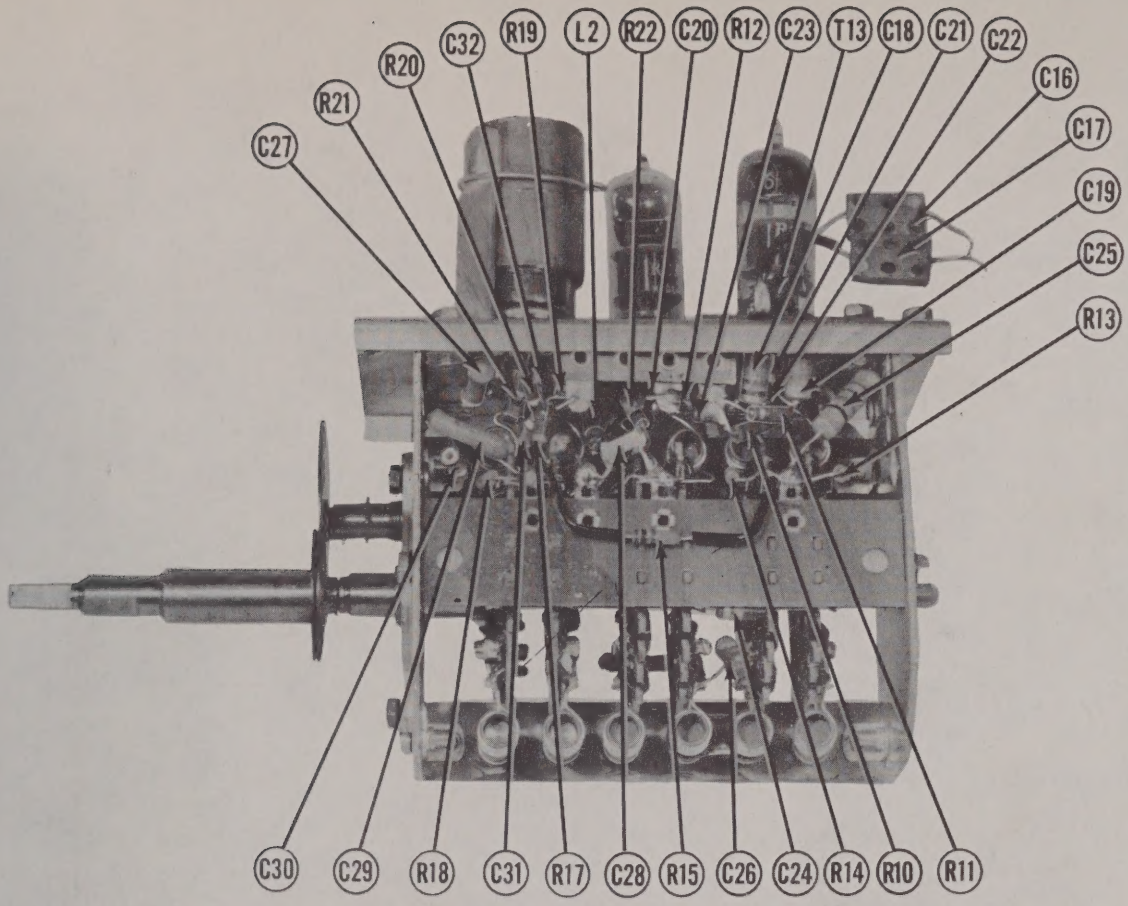
VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V1	6AG5	-.4VDC	.9VDC	0V.	6.3VAC	120VDC	120VDC	.9VDC	-	-
V2	6AG5	-1.1VDC	.2VDC	0V.	6.3VAC	125VDC	125VDC	.2VDC	-	-
V3	6AG5	0V.	1.8VDC	0V.	6.3VAC	120VDC	160VDC	1.8VDC	-	-
V4	6H6	0V.	0V.	-2.6VDC	0V.	-.2VDC	-.4VDC	6.3VAC	1.2VDC	-
V5	6SN7GT	0V.	105VDC	.8VDC	-.5VDC	117VDC	0V.	6.3VAC	0V.	-
V6	6AU6	0V.	0V.	0V.	6.3VAC	100VDC	132VDC	4.2VDC	-	-
V7	6BA6	0V.	0V.	0V.	6.3VAC	120VDC	125VDC	1.4VDC	-	-
V8	6AU6	-.4VDC	0V.	0V.	6.3VAC	122VDC	95VDC	0V.	-	-
V9	6S8GT	-.3VDC	0V.	-.3VDC	-.5VDC	-.1VDC	82VDC	6.3VAC	0V.	-.7VDC
V10	6K6GT	0V.	0V.	170VDC	150VDC	-2.8VDC	-9.7VDC	6.3VAC	0V.	-
V11	6SN7GT	0V.*	370VDC*	15VDC*	0V.*	28VDC*	1.2VDC*	6.3VAC	0V.	-
V12	6AL5	0V.*	0V.*	0V.	6.3VAC	.6VDC*	0V.	-.6VDC	-	-
V13	6SN7GT	-60VDC*	340VDC*	0V.*	-60VDC*	75VDC*	0V.*	6.3VAC	0V.	-
V14	6SN7GT	-145VDC*	280VDC*	0V.*	-145VDC*	300VDC*	0V.*	6.3VAC	0V.	-
V15	6SN7GT	0V.	70VDC	0V.	-.5VDC	68VDC	0V.	6.3VAC	0V.	-
V16	6K6GT	0V.	0V.	360VDC*	360VDC*	0V.*	34VDC*	6.3VAC	34VDC*	-
V17	6BG6-G	0V.	0V.	9VDC*	0V.*	-13VDC*	0V.*	6.3VAC	225VDC*	‡
V18	1B3GT		DO NOT MEASURE.							
V19	5V4-G	0V.	480VDC*	0V.	400VDC*	0V.	400VDC*	0V.	480VDC*	-
V20	25Z6GT	0V.	0V.	0V.	145VAC	145VAC	0V.	25VAC	220VDC	-
V21	25Z6GT	0V.	50VAC	0V.	145VAC	145VAC	0V.	25VAC	220VDC	-
V22	25Z6GT	0V.	50VAC	0V.	145VAC	145VAC	0V.	75VAC	220VDC	-
V23	25Z6GT	0V.	100VAC	-237VDC	150VAC	150VAC	0V.	75VAC	0V.	-
V24	25Z6GT	0V.	100VAC	-237VDC	150VAC	150VAC	0V.	125VAC	0V.	-
$V25	10BP4									
V26	6J6	75VDC	75VDC	6.3VAC	0V.	-11VDC#	-11VDC#	.2VDC	-	-
V27	6J6	130VDC	130VDC	6.3VAC	0V.	-3.1VDC	-4.3VDC	0V.	-	-
V28	6J6	105VDC	105VDC	6.3VAC	0V.	-.7VDC	-.7VDC	0V.	-	-

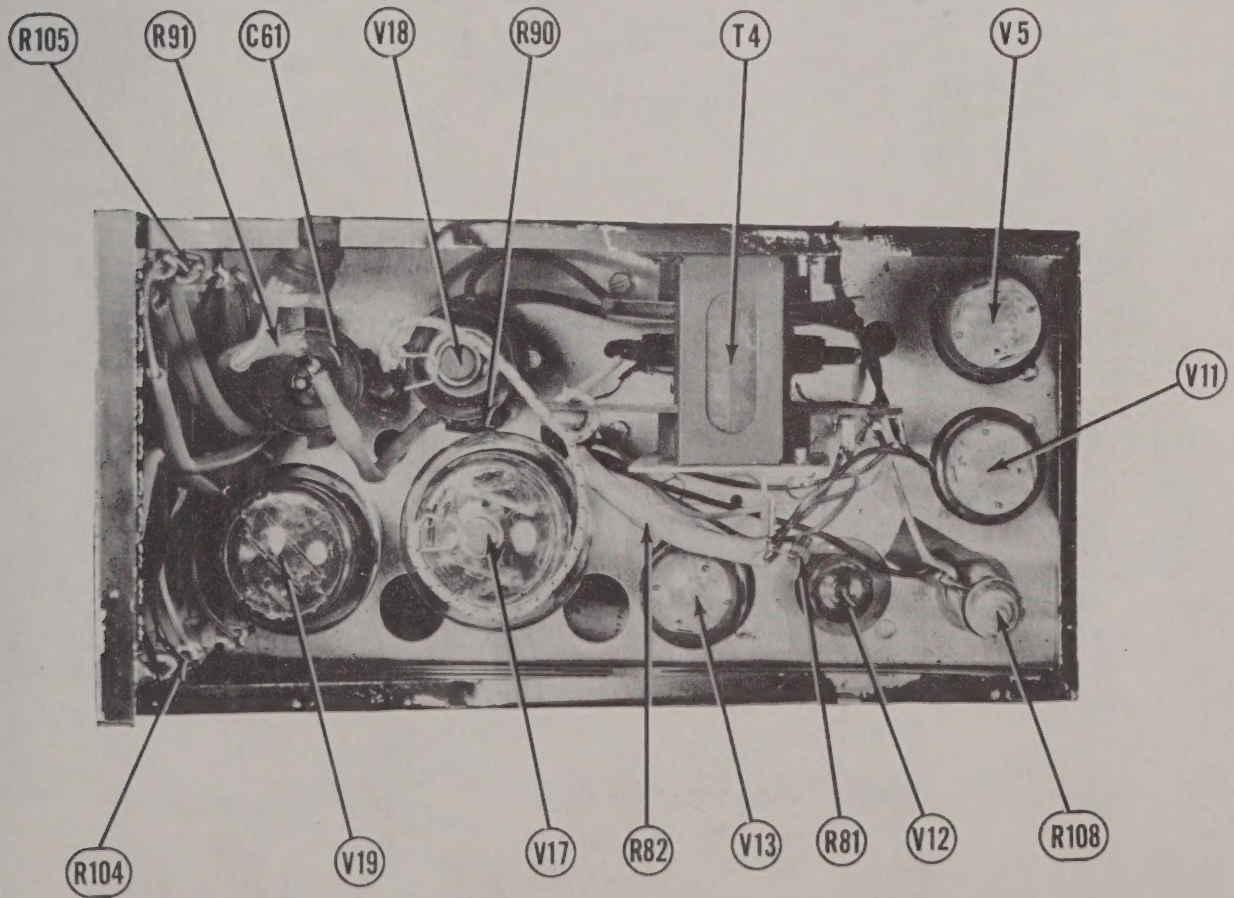
TUBE	PIN 1	2	3	4	5	6	7	8	9	10	11	12
$V25 10BP4	0V.	.8VDC	0V.	0V.	0V.	0V.	0V.	0V.	0V.	180VDC	7.5VDC	6.3VAC

‡Do not measure.
#Measured with VTVM.
*Readings taken from Pin #6 of V14.

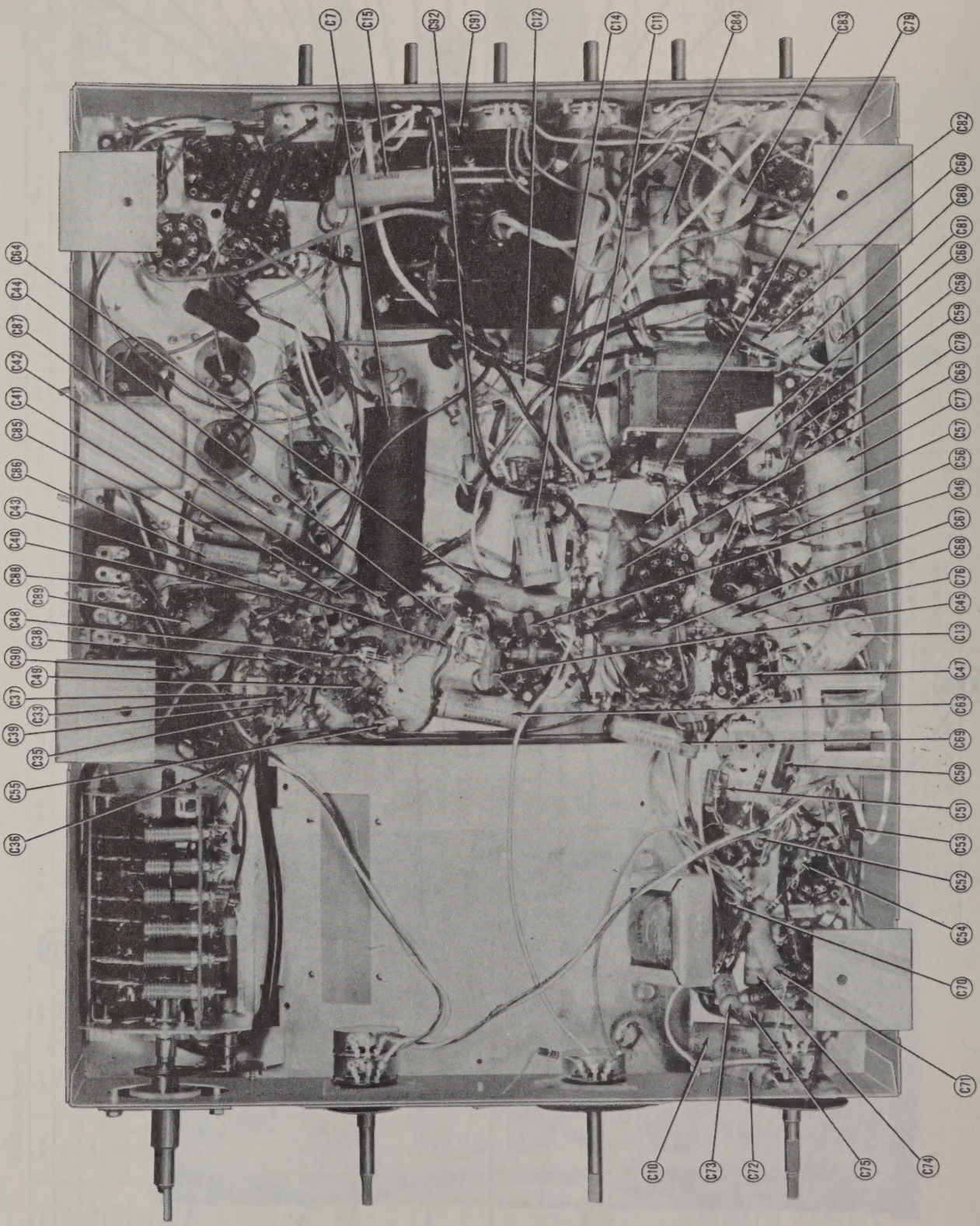
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms.
2. Socket connections are shown as bottom views.
3. Line voltage maintained at 117 volts for voltage readings.



TUNER ASSEMBLY - RIGHT SIDE



POWER SUPPLY UNIT - TOP VIEW



CHASSIS BOTTOM VIEW - CAPACITOR IDENTIFICATION